

REPORT

Evaluation of the Round Two Health Care Innovation Awards (HCIA R2): First Annual Report

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AWARDEE ABBREVIATIONS

Association of American Medical Colleges	AAMC
American College of Cardiology Foundation	ACCF
Altarum Institute	Altarum
Amerigroup	Amerigroup
Avera Health	Avera
Boston Medical Center	BMC
CareChoice Cooperative	CCC
Community Care of North Carolina	CCNC
Catholic Health Initiatives Iowa Corp., DBA Mercy Medical Center–Des Moines	CHIIC
Children’s Home Society of Florida	CHS
Clifford W. Beers Guidance Clinic, Inc.	Clifford Beers
Trustees of Columbia University in the City of New York	Columbia
Detroit Medical Center	DMC
Fund for Public Health in New York, Inc.	FPHNY
Four Seasons Compassion for Life	Four Seasons
George Washington University	GWU
Johns Hopkins University	Hopkins
Icahn School of Medicine at Mount Sinai	Icahn
City of Mesa Fire and Medical Department	Mesa
Montefiore Medical Center	Montefiore
National Association of Children’s Hospitals and Related Institutions	NACHRI
National Health Care for the Homeless Council	NHCHC
Nebraska Medical	NM
North Shore–LIJ Health System, Inc.	North Shore
New York City Health and Hospitals Corp.	NYCH+H
Seattle Children’s Hospital	SCH
University of Kansas Hospital Authority	U KS
University of North Carolina at Chapel Hill	U NC
Regents of the University of California at San Diego	UCSD
Regents of the University of California at San Francisco	UCSF
University Hospitals Case Medical Center	UHCMC
Board of Trustees of the University of Illinois, Chicago	UIC
Regents of the University of Michigan	UMich
University of New Mexico, Health Sciences Center	UNM
Ventura County Health Care Agency	Ventura
VillageCare	VillageCare
Washington University School of Medicine	Wash U
Wisconsin Department of Health Services	WI DHS
Yale University	Yale

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EXECUTIVE SUMMARY

Introduction

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) in the Centers for Medicare & Medicaid Services (CMS) awarded the second round of cooperative agreements, known as Round Two of the Health Care Innovation Awards (HCIA R2). Thirty-nine organizations were awarded three-year cooperative agreements to implement their proposed innovative models for improving the quality of both care and health, and for lowering the cost of care for Medicare, Medicaid, and Children's Health Insurance Program (CHIP) beneficiaries. Mathematica Policy Research, under contract to CMS, is evaluating the extent to which awardees have been successful in implementing their programs and in accomplishing these goals.

This annual report has three general purposes:

1. To highlight the variation in awardee and program characteristics, including differences in the awardees' service delivery and payment models (Chapter II)
2. To synthesize the implementation experience of the 39 awardees, identifying the barriers and facilitators they encountered during the first year of program implementation and, when possible, highlighting strategies for effectively overcoming the first-year implementation challenges (Chapter III)
3. To summarize the results from our impact evaluability assessments, highlighting (a) the challenges involved in identifying credible comparison groups and timely administrative data for awardees that appear to meet the evaluability criteria at this phase of operations and (b) the methods we intend to use to overcome these challenges (Chapter IV)

We based our analysis of program implementation and evaluability on qualitative data, including the awardees' initial proposals and subsequent modifications, a review of the awardees' self-reports from the first through the fourth program quarter (September 2014 to August 2015), telephone interviews with program administrators conducted in April and May of 2015, and in-person interviews with program administrators and frontline staff at up to three implementing sites per awardee during the fall of 2015. In addition, we used program enrollment data (through August 2015) provided by the awardees to the implementation and monitoring contractor to describe how the number and distribution of program participants to date compares to target levels.

We present the findings for each of the 39 programs individually in Appendix B. These individual program narratives summarize the implementation experience of each awardee, focusing on the first 12 months of their cooperative agreements. The information in the main body of this report represents a cross-awardee synthesis of the findings presented in the 39 awardee-specific program narratives.

Key findings from the implementation evaluation

Our first-year findings underscore the facilitators and challenges associated with implementing major innovations in health care delivery and payment systems that are designed to improve health care and health outcomes at a lower cost. The awardees comprise an eclectic, innovative set of programs, which, as a group, hold substantial promise for addressing persistent problems with the quality and costs of health care for Medicare, Medicaid, and CHIP beneficiaries. The awardee leaders are aggressively seeking creative solutions to some of the problems they are experiencing, including the following:

- **All 39 awardees operationalized their programs, but they modified them as they identified opportunities for improving them in ways that would better serve participants and achieve program goals.** Common modifications include changes to program operations; revisions to the recruiting, referral, outreach, or enrollment processes; modifications to the staffing or management structure and responsibilities; changes in the definition of the target population; revisions to planned health information technology (health IT) systems or the development of new systems; changes in the number of implementing sites; and the creation of workarounds for problematic electronic medical record (EMR) systems.
- **Fifteen awardees implemented their programs on schedule based on their own milestones, but 24 of them experienced some type of delay (see Chapter III, Table III.2).** The most common delays were (1) operational delays, such as needing more time to plan for the complexity of actually implementing the program or under-estimating how long it would take to recruit partners or to integrate new tools into existing workflows; and (2) hiring delays due to difficulty in identifying and recruiting qualified staff or having to put hiring on hold because other program components were behind schedule. The protracted development of key program tools and lengthy approvals by institutional review boards (IRBs) also led to implementation delays.
- **Only six awardees met or surpassed their first-year enrollment goals (see Chapter III, Table III.3).** Overall, 12 awardees met or exceeded 80 percent of their first-year enrollment goals, 7 awardees achieved 50 to 80 percent of their goals, and 19 awardees achieved less than half of their enrollment goals (4 of which achieved less than 10 percent of their goals). One awardee did not provide a count of participants served in Year 1 and is not included in this assessment. Awardees that actively recruit and enroll participants (as opposed to awardees that serve all eligible patients without a formal recruitment and enrollment process) and programs that have been operating longer are more likely to have met or exceeded their enrollment target.

Awardees responded to outreach, referral, and enrollment challenges in a variety of ways, including offering enhanced implementation training and technical assistance to their referral partners, revising their eligibility criteria, expanding or otherwise enhancing their implementing sites, and streamlining their referral and enrollment procedures. It is too early to tell whether these strategies will prove effective in helping the awardees overcome these challenges.

A number of factors facilitated or impeded the awardees' efforts to implement their interventions as planned. The most common facilitators of implementation effectiveness include the following:

- **The perceived or need for the program or its relative advantage over the standard delivery of care.** The most prominent perceived relative advantage of the programs is that they fill some previously unmet needs of specific populations and improve quality of care and provider efficiency.
- **The adaptability of program components.** This feature enabled program managers and frontline staff not only to develop strategies for overcoming implementation challenges but also to tailor the intervention to organizational, staff, and participant needs.
- **Strong engagement and buy-in across all staff levels.** Awardees boosted staff engagement by making use of program champions, who motivated and supported staff at the implementing sites, and by building staff capacity through high quality training and support.
- **Experience with similar prior or concurrent projects** and the opportunity to leverage the experience and tools of partner practices and organizations.
- **High-functioning teams that communicate effectively** and benefit from multidisciplinary expertise and shared learning.

The most common barriers to implementation effectiveness include the following:

- **Insufficient or variable staff buy-in and program participation,** most notably due to competing priorities and a need for clear protocols and definitions of care processes and staff roles.
- **Issues with health IT,** mostly related to the difficulty of integrating a program's health IT components into the IT systems of providers and implementing partners. This situation was exacerbated by the fact that providers and partners often use different EMRs that vary substantially from one another in terms of functionality. As a result, awardees often had to develop interfaces that work for all sites or provide individualized help to providers and partners.
- **Unanticipated complexity of participants' needs and life circumstances.**

Finally, we found that most awardees made little progress in developing the payment models that they are required to design by the end of their three-year cooperative agreements. Although most awardees have a general concept of the payment model they hope to use, many models are still in the early stages of development. Many awardees plan to finalize their payment models in the last year of their cooperative agreements, when they have enough data on service costs to calibrate their rates. In addition, some awardees want to wait until they can demonstrate that their programs improve care and lower costs before approaching payers with their proposed payment plan.

Key findings on the evaluability of program impacts

Although all awardees will have an implementation evaluation and some type of further analysis, the extent to which we will be able to conduct a rigorous difference-in-differences analysis of program impacts on patient outcomes will be based on the following eight factors:

1. Barriers to implementation
2. Expectation that the program will improve outcomes by a moderate amount
3. Ability to identify the treatment group in the post-intervention period
4. Ability to identify the treatment group in the pre-intervention period
5. Availability of outcome measures for the treatment group
6. Ability to identify a credible comparison group
7. Availability of outcome measures for the comparison group
8. Statistical power to detect effects on core measures

Based solely on being able to generate rigorous quantitative impact estimates, we grouped the awardees into three evaluability tiers. We conducted this assessment fairly early in the lifecycle of the awardees' programs; with more implementation experience, our assessment of the evaluability of each program could change. We identified 26 awardees as "Tier 1" evaluability (using CMS's internally defined criteria for tiers), which means that we expect them to meet these eight criteria. As a result, we expect to have enough statistical power to detect effects of the size that these awardees anticipate for at least one of the four core measures: (1) total Medicare and/or Medicaid expenditures, (2) rate of all-cause hospitalizations, (3) rate of emergency department (ED) visits that do not lead to a hospitalization, and (4) rate of 30-day unplanned hospital readmissions.¹ This assessment is based on the following set of assumptions: awardees will meet their original enrollment targets, we can identify a comparison group, and we will use a difference-in-differences design applied to administrative data. Of these 26 awardees, we are reasonably confident that we can construct a credible comparison group for 15 of them (referred to as Tier 1, Category 1 in Table ES.1). For the other 11, there may be challenges to identifying a credible comparison group or to obtaining timely access to the data we need (referred to as Tier 1, Category 2).

¹ For programs with expected low enrollment (such as the University of California at San Francisco and Amerigroup), we may use the likelihood of ED visits and hospitalizations rather than their rates.

Table ES.1. HCIA R2 awardees by evaluability tier

Evaluability tier	Definition	Number of awardees	Awardees
Tier 1 Category 1	Reasonable confidence in ability to conduct rigorous difference-in-differences analysis	15	AAMC, CCC, CCNC, CHIIC, Clifford Beers, DMC, FPHNY, GWU, North Shore, NYCH+H, UHCMC, VillageCare, UCSF, Ventura, Yale
Tier 1 Category 2	Meets most of the criteria for Tier 1, but some concern about ability to identify a credible comparison group or get timely access to needed data	11	ACCF, Altarum, Avera, UMich, Montefiore, Mesa, NACHRI, NM, SCH, UNM, WI DHS
Tier 2	Unable to construct comparison group	0	None
Tier 3	Inadequate sample size to detect meaningful differences or no administrative data	6	BMC, CHS, Hopkins, U KS, U NC, Wash U
Tier TBD	Too little information currently available to assess evaluability fully	7	Amerigroup, Columbia, Four Seasons, Icahn, NHCHC, UIC, UCSD

Source: Evaluability assessments completed by Mathematica, October–December 2015.

Note: Tier 1 means that we expect to have (1) sufficient statistical power to detect effects of the size that the awardee anticipated for at least one core measure, (2) an available comparison group, and (3) available administrative data to support a difference-in-differences design. Tier 2 is for awardees for which we cannot identify a credible comparison group but for which we would still expect to obtain administrative data and a sample size that would be adequate to detect impacts of the size expected by the awardees for at least one core measure. Tier 3 means that we do not expect to obtain administrative data or we anticipate that the sample size will be inadequate for all of the core measures. Our assignments of awardees to evaluability tiers are based on several key assumptions and are subject to change as we learn more about each program. In some cases, low enrollment, limited data availability, or challenges with identifying a credible comparison group may cause us to change the tier assignment or prevent us from estimating the proposed design.

TBD = to be determined.

Tier 2 awardees are those for which we cannot identify a credible comparison group, but for which we expect to obtain administrative data and a sample that is large enough to detect meaningful pre-post differences on at least one core measure. There are no awardees in this tier.

We assigned six awardees to Tier 3. This means that—at the time of conducting our assessment—we are not yet confident that we will be able to obtain the necessary administrative data for them and/or that, unless enrollment patterns improve, we do not expect the treatment groups to be large enough to detect meaningful pre-post differences for at least one core measure. The impact evaluation for the Tier 3 awardees will be as rigorous as the data allow. We will continue to try to obtain the administrative data and to monitor treatment group sizes throughout the evaluation. When appropriate, CMS is also providing technical assistance to awardees experiencing enrollment challenges.

Finally, there remain seven other awardees for which we are continuing to determine whether we can identify a credible comparison group (referred to as Tier TBD). For some of the awardees in this tier, we also face potential problems regarding adequate enrollment or data availability. As with Tier 3 awardees, the impact analysis for the TBD group will be as rigorous as possible and we will continue to try to obtain the administrative data needed to evaluate them throughout the program.

As mentioned, however, it is important to emphasize that our assignments of awardees to evaluability tiers are based on several key assumptions. We will continue to reassess the evaluability of each program and are likely to reassign awardees to alternative tiers as we learn more about each program and as awardees gain more implementation experience. In some cases, low enrollment, limited data availability, or challenges in identifying a credible comparison group may cause us to change the tier assignment or prevent us from estimating the proposed design.

Implications for the evaluation

Given that the HCIA R2 cooperative agreements are limited to three years, the delay in critical implementation activities raises the concern that the evaluation findings will be less definitive than desired unless program effects are quite large. This concern is exacerbated by the likelihood that programs may not begin to have discernible impacts until after they have been operating for 12 to 18 months or longer, especially in programs for which the intervention and/or the target population are still evolving. Close attention to these early implementation challenges, including the use of expanded technical assistance, may be critical to the success of the overall initiative.

All awardees will receive an implementation evaluation, plus a program outcome evaluation based on a difference-in-differences, pre-post, or descriptive analysis. We will use the following strategy to determine the final analytic approach for our outcome evaluation:

- We will conduct a difference-in-differences analysis of program impacts for those awardees with (1) enough enrollees to yield adequate power to detect program impacts of the expected size (or a policy relevant larger size) on one or more core outcomes, (2) a credible comparison group, and (3) available data from the same source for program enrollees and comparison group members.
- We will conduct a pre-post comparison or descriptive analysis of program outcomes based on awardee-collected claims data, EMR data, or program data for awardees for which a difference-in-differences analysis is not possible but some data are available. We are awaiting and continuing to pursue the additional information we need to determine the best approach to evaluate program outcomes for awardees that fall into this group.

Next steps

During the first year of the evaluation, we have begun to develop a comprehensive description of the delivery system and payment models funded under HCIA R2; we have also started to tailor our general impact evaluation approach to the characteristics of each program. But the programs have not been operating for long, and there are too few participants to date for us to develop comparison groups and estimate program effects. We will therefore focus on four primary activities during the second year of the evaluation:

1. Conduct a second round of interviews with program administrators and frontline staff at selected implementing sites to examine in greater detail not only the specific operational

strategies that awardees are using to transform the delivery of services but also the potential effect of implementation progress and strategies on our evaluation design

2. Field a survey of non-clinician staff who are implementing the interventions or providing care or services to participants in the intervention in order to understand the roles and responsibilities of these staff, learn about the effects of the intervention on their daily work, and assess their perceptions of program implementation and program effects (clinician and patient surveys will be conducted during the third year of the evaluation)
3. Develop and select comparison groups for each awardee when this is possible and when enough individuals have enrolled in the program
4. Calculate the four core measures and other key outcomes for the treatment and comparison groups in the baseline and in the first 12 to 18 months of operations to the extent that this is feasible, given the characteristics and progress of each program and the availability of claims and eligibility data

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I. INTRODUCTION

A. Goals of the HCIA R2 initiative and evaluation

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) in the Centers for Medicare & Medicaid Services (CMS) awarded the second round of cooperative agreements, known as Round Two of the Health Care Innovation Awards (HCIA R2), to 39 organizations that have proposed innovative ways to improve the quality and lower the cost of care for Medicare, Medicaid, and Children's Health Insurance Program (CHIP) beneficiaries. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, or CHIP costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care.

In February 2015 (five months after the HCIA R2 cooperative agreements were awarded), CMMI selected Mathematica Policy Research and its partners to evaluate the HCIA R2 programs, which represent a wide range of service delivery and payment models, target populations, and care settings. The goals of this five-year evaluation are to assess whether and how the programs are not only transforming the delivery and financing of health care services but also improving the coordination, efficiency, and quality of care. We identified six evaluation objectives to help CMMI achieve these goals:

1. **Describe the implementation experience of each awardee** and assess the barriers to and facilitators of their success in promoting change
2. **Assess the effects of each model on the following: beneficiary experience; the attitudes of clinical and non-clinical staff toward work and job satisfaction, and their perceptions of the intervention's effects on processes and outcomes of care;** and whether the awardees' workforce is sufficient with respect to implementing the service delivery model
3. **Assess the effects of each model on health care costs, utilization, quality of care, beneficiary experience, and patient outcomes** by using the same methodologies and outcome measures where possible, plus additional outcome measures tailored to each award as appropriate and as approved by CMMI
4. **Synthesize the findings from the implementation and program impact evaluations of each awardee with input from key stakeholders** in order to (1) identify what model components appear to be most critical to success and how the administrative, geographic, and organizational context influenced this success; and (2) inform CMMI's decision making about the sustainability and scalability of each type of model
5. **Assess all payment model designs and the experience of awardees in developing and testing these models**, focusing not only on the challenges and the strategies used to address

them but also on the extent to which these models achieved the predicted changes in utilization, savings, and quality of care during the three-year cooperative agreement

6. **Conduct an integrated synthesis and meta-evaluation of the awardee-specific results,** drawing lessons that can be generalized across similar groups of awardees and to the entire portfolio of awardees

We will examine the HCIA R2 programs across three key areas of inquiry: (1) program implementation, (2) program effects on clinicians and other staff, and (3) program effects on participants. We will also use a mixed-methods methodology, tailoring the components of our general evaluation approach to the details that are specific to each of the 39 programs. We will use many data sources, including program documents; telephone interviews with and site visits to the awardees; quarterly monitoring reports and aggregated self-monitoring data submitted by awardees to the implementation and monitoring contractor; surveys of clinicians, non-clinician staff, and participants; claims data; and, possibly, patient-level program data and electronic medical records (EMRs).

B. Purpose and outline of this report

This annual report has three general purposes, which are listed below. They relate directly to the first and fifth evaluation objectives (describing the implementation of the service delivery models and the development of payment models), and they lay the foundation for addressing the other objectives.

1. Highlight the variation in awardee and program characteristics, including differences in the service delivery and payment models (Chapter II)
2. Synthesize the implementation experience of the 39 HCIA R2 awardees and the effectiveness with which they implemented their programs, identifying the barriers and facilitators encountered during the first year of program implementation (Chapter III)
3. Summarize the results from our impact evaluability assessments, classifying the awardees by the extent to which they meet the eight criteria we used to assess their evaluability (Chapter IV)

We summarize the conclusions and their implications for the evaluation in Chapter V; evaluation activities for the coming year are described in Chapter VI. Appendix B of this report provides the 39 awardee-specific narratives on which the implementation analysis in the main body of this report is based.

II. THE HCIA R2 AWARDEES AND THEIR PROGRAMS

To implement the second round of the HCIA initiative, CMMI established 39 cooperative agreements with different types of organizations that are working on a diverse set of problems in a variety of settings throughout the nation's health care system. Although the awardees vary widely in many respects, some of them and their programs share certain characteristics. For example, many awardees are academic medical centers, many are working to improve care coordination, and many are focused on a particular payer and/or age group of patients. Understanding the implications of these shared characteristics will contribute substantially to the strong foundation that we are building for the HCIA R2 evaluation.

This chapter provides an overview of the HCIA R2 awardees and their programs, highlighting the features that have implications for our evaluation. The chapter includes a synthesis of the awardees that covers the following areas: key characteristics of the awardees, the nature of the markets in which they are implementing their programs, the size of their awards, and program launch dates (Section A); general program characteristics, including the type of business entity implementing the program, intervention focus, target population, and enrollment process (Section B); the service delivery models, including the similarities and differences in how the awardees are operationalizing these models (Section C); and the payment reform models that the awardees are planning and, in a few cases, are beginning to implement (Section D). Summary tables provide an overview of the awardees' characteristics, and the tables in Appendix A show awardee-specific data in detail.

All of this information reflects data collected from awardees through December 31, 2015, and it is preliminary. As the awardees gain more experience with implementation, their programs are likely to evolve, and some characteristics reported here may change. We will monitor and report on such changes over the remainder of the cooperative agreements, which extend through August 2017. Subsequent chapters in this report cover the significance of this early information with respect to the findings from the evaluation of implementation effectiveness across all awardees and across subgroups of analytic interest.

A. Characteristics of HCIA R2 awardees

The HCIA R2 awardees represent a range of entities operating in a variety of markets. Further, awardees vary by their level of previous experience, the size of the HCIA R2 award, and when they launched their programs. The differences in these characteristics might translate into diversity in implementation experience, and will also likely have important implications for our evaluation. This section describes the differences and similarities across awardees, with awardee-level information shown in Table II.1 and in Appendix A, Table A.2. Subsequent chapters present an analysis of the extent to which the awardee characteristics have affected their early implementation experience.

Types of entities. The HCIA R2 awardees represent a wide range of entities in the nation's health care system, including academic medical centers, not-for-profit organizations, provider organizations, managed care organizations, integrated health systems, health clinics, hospitals,

and local and state agencies. Academic medical centers are the most common type of entity. There are also differences in the nature of the organizations within a given type of entity. For example, the second most common type of entity, not-for-profit organizations, includes a diverse set of organizations ranging from professional associations, to advocacy agencies, to nonprofit hospitals. Understanding the differences between entities and the organizations within them is important to the evaluation for several reasons. Different types of entities bring different types of resources to program implementation, and certain evaluation findings will be more relevant to some types of organizations than to others.

For example, the Wisconsin Department of Health Services is partnering with two children's hospitals to implement a program that provides care management and care coordination to children with complex needs. As a state Medicaid agency, the Wisconsin Department of Health Services can readily access the state's Medicaid data and has decision-making authority regarding payment reforms. As another example, the National Association of Children's Hospitals is partnering with 10 children's hospitals to implement a program that also provides care management and care coordination to children with complex needs. However, as a provider organization, this awardee has had to negotiate even limited access to Medicaid data and has less control over the development of payment reforms because they are unique to each implementing hospital. In addition, although the evaluation findings for both programs are likely to be relevant to children's hospitals, the findings from the Wisconsin Department of Health Services' program may be especially relevant to Medicaid agencies interested in partnering with children's hospitals.

Table II.1. Characteristics of HCIA R2 awardees

Awardee	Type of entity	Award amount	Program launch date ^a	Operational months (through Dec 2015) ^b
Altarum Institute	Nonprofit	\$9,383,762	5/8/2015	8
American College of Cardiology Foundation	Nonprofit	\$15,830,092	11/4/2014	14
Amerigroup	MCO	\$5,833,492	3/1/2015	10
Association of American Medical Colleges	Nonprofit	\$7,125,770	9/1/2014	16
Avera Health	Integrated health sys.	\$8,827,572	11/1/2014	14
Board of Trustees of the University of Illinois, Chicago	Academic medical ctr.	\$19,581,403	12/1/2014	13
Boston Medical Center	Nonprofit	\$6,128,059	12/12/2014	13
CareChoice Cooperative	Nonprofit	\$3,347,384	1/1/2015	12
Catholic Health Initiatives	Integrated health sys.	\$10,170,496	9/1/2014	16
Children's Home Society of Florida	Nonprofit	\$2,078,295	10/1/2014	15
City of Mesa Fire and Medical Department	Public agency	\$12,779,125	12/1/2014	13
Clifford W. Beers Guidance Clinic, Inc.	Behavioral health clinic	\$9,739,427	12/2/2014	13
Community Care of North Carolina	MCO	\$15,106,050	3/1/2015	10
Detroit Medical Center	Hospital	\$9,987,542	1/20/2015	11

Table II.1 (*continued*)

Awardee	Type of entity	Award amount	Program launch date ^a	Operational months (through Dec 2015) ^b
Four Seasons Compassion for Life	Nonprofit	\$9,596,123	9/2/2014	16
Fund for Public Health in New York, Inc.	Nonprofit	\$9,948,459	1/15/2015	12
George Washington University	Academic medical ctr.	\$23,808,617	4/28/2015	8
Icahn School of Medicine at Mount Sinai	Academic medical ctr.	\$9,610,517	11/18/2014	13
Johns Hopkins University	Academic medical ctr.	\$6,387,736	3/2/2015	10
Montefiore Medical Center	Academic medical ctr.	\$5,583,090	2/9/2015	11
National Association of Children's Hospitals and Related Institutions	Provider organization	\$23,198,196	5/1/2015	8
National Health Care for the Homeless Council	Nonprofit	\$2,673,476	3/2/2015	10
Nebraska Medicine	Academic medical ctr.	\$9,993,626	12/22/2014	12
New York City Health and Hospitals	Integrated health sys.	\$17,916,663	9/1/2014	16
North Shore–LIJ Health System, Inc.	Integrated health sys.	\$2,453,742	11/17/2014	13
Regents of the Univ. of CA at San Diego	Academic medical ctr.	\$5,820,416	1/19/2015	12
Regents of the Univ. of CA at San Francisco	Academic medical ctr.	\$9,990,848	3/31/2015	9
Regents of the University of Michigan	Academic medical ctr.	\$6,389,850	9/15/2014	16
Seattle Children's Hospital	Hospital	\$5,561,620	2/1/2015	11
Trustees of Columbia Univ. in the City of NY	Academic medical ctr.	\$3,887,446	5/11/2015	8
University Hospitals Case Medical Center	Academic medical ctr.	\$4,675,383	2/19/2015	10
University of Kansas Hospital Authority	Academic medical ctr.	\$12,523,441	3/1/2015	10
Univ. of New Mexico, Health Sciences Center	Academic medical ctr.	\$15,042,466	5/4/2015	8
University of North Carolina at Chapel Hill	Academic medical ctr.	\$6,034,888	2/23/2015	10
Ventura County Health Care Agency	Public agency	\$4,136,499	9/1/2014	16
VillageCare	Nonprofit	\$7,983,297	4/1/2015	9
Washington University School of Medicine	Academic medical ctr.	\$4,034,879	1/8/2015	12
Wisconsin Department of Health Services	Public agency	\$9,444,864	9/1/2014	16
Yale University	Academic medical ctr.	\$7,159,976	3/25/2015	9

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015. The program launch dates were compiled from the data file from the implementing and monitoring contractor, third program quarter.

^a After an initial planning period, the awardees' programs became operational as of this date.

^b The number of operational months is rounded to the nearest month and is calculated by determining the number of months between the program launch date and December 31, 2015.

CA = California; LIJ = Long Island Jewish; MCO = managed care organization; and NY = New York.

Award amount and program launch dates. The awards range from just over \$2 million to more than \$23 million, with a mean of \$9.3 million and a median of \$8.8 million. The program launch dates, which refer to the date that programs became operational, also vary, spanning the nine-month period from September 2014 through May 2015. Because of the wide range in

launch dates, the length of time that programs were operating as of December 31, 2015, ranges from 8 to 16 months. The number of “operational months” is another factor that is likely to have implications for our evaluation. For example, programs that have been operational for fewer operational months may not have observable impacts until late in their cooperative agreements period.

Market characteristics. The markets in which the awardees are implementing their programs range from urban, to suburban, to rural. More than one-quarter of the awardees are implementing their programs in all three settings, nearly two-thirds are implementing their programs in urban and/or suburban settings only, and three awardees are implementing their programs exclusively in rural settings. With regard to program reach, nearly half are confined to a local market (a single community or city), one-fifth are confined to regions in a given state (multiple communities or cities within a state), and about one-third are statewide or multistate programs.

The variation in these market characteristics is likely to have implications for our evaluation. For example, because of policy and demographic differences across states, awardees that are implementing multistate programs may encounter differences in program sites that affect implementation effectiveness and program impacts. Due to their remote locations, programs operating in rural areas may be more likely to face limited resources, including the human resources they need to fill program positions or ancillary resources that would support program implementation. Summary information on the characteristics of the market in which each awardee operates is provided in Table II.2 in Section B.

Experience with similar programs. The awardees vary in their level of experience with programs that are similar to the HCIA R2 programs. Nearly two-thirds of the awardees have operated a pilot or a program similar to their HCIA R2 program, and one-quarter of them have experience with the subject matter of their programs but not with implementing them. Because awardees with experience might be able to leverage this knowledge to more effectively implement their HCIA R2 programs, the extent of experience could have implications for the evaluation. Summary information on the awardees’ experience with similar programs is provided in Table II.2 in Section B.

B. Characteristics of HCIA R2 programs

The programs implemented by HCIA R2 awardees vary in several dimensions, including the focus of their interventions, the program setting, the number and types of implementing organizations, the target population, and the enrollment process. These characteristics, described in detail below, have shaped how the programs are organized and implemented, and this section begins to consider the ways in which these characteristics may influence our evaluation. Subsequent chapters present an analysis of the extent to which the program characteristics affect early implementation. Summary information on these characteristics is presented in Table II.2 and Table II.3, and awardee-level data are shown in Appendix A, Table A.1 and A.3.

Table II.2. Characteristics of HCIA R2 programs

Category	Group	Characteristic	Number of awardees
Intervention focus	Individual		37
	Provider		12
Setting	Program type	Provider-based	28
		Community-based	14
		Home-based	13
		Virtual	9
	Type of implementing organization	Hospital	19
		Primary care clinic	17
		Specialty care clinic	12
		Long-term care facility	4
		Community-based organization	4
		Dental clinic	2
		School-based health center	2
		Emergency medical services	2
		Behavioral health clinic	1
		Pharmacy	1
		Short-term medical respite center	1
	Payer	Medicaid	34
		Medicare	26
		Duals only	1
		Privately insured	10
		Uninsured	8
		CHIP	7
	Age	Adult/Elderly	31
		Youth	15
	Target conditions	Particular chronic condition(s)	26
		Cardiovascular and respiratory conditions	14
		Mental and behavioral health	10
		Diabetes	9
		HIV, hepatitis C, STIs	5
		Kidney disease	4
		Dementia	3
		Oral health	3
		Cancer	3
		Particular acute condition(s)	11
		None ^a	8
Market characteristics	Region	Local	19
		Regional within a state	8
		Statewide	4
		Multistate	8
	Market area	Urban	36
		Suburban	21

Table II.2 (*continued*)

Category	Group	Characteristic	Number of awardees
		Rural	14
Previous experience		Pilot test	14
		Experience with similar programs	16
		Content experience only	9
		Uncertain	3

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Notes: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

^a This category includes six awardees that are targeting particular types of health care as opposed to targeting certain conditions (Altarum, Amerigroup, Avera, CareChoice, Washington University, and Yale University) and two awardees that are focused on population health (the Association of American Medical Colleges and the Children's Home Society).

1. Intervention focus

Programs can target the individuals who receive services, the providers and organizations that provide services, or both.² Interventions focused on individuals who receive services attempt to directly modify or change the behaviors, actions, or outcomes of individual participants; interventions focused on providers attempt to change the behaviors, actions, and outcomes of individual providers or provider organizations. Several interventions focus on the individuals who receive services *and* on the service providers or organizations. Some awardees have taken an "ecological" approach that is intended to change the interactions between individual participants and providers or organizations. For example, the American College of Cardiology Foundation is seeking to change not only the behaviors of cardiologists and other clinical specialists who treat patients with stable ischemic heart disease, but also the behavior of program participants by providing them with decision-support tools at the point of care and patient education materials on their treatment options. The awardee hypothesizes that increasing shared decision making between participants and cardiac physicians as well as improving their communication about the risks posed by their conditions will lead to the best possible medication regimens and the adoption of lifestyle programs that have the greatest potential to mitigate a participant's risk factors.

The variation in intervention focus may have implications for our evaluation. Programs taking an "ecological" approach, for example, may find it challenging to tailor their interventions to the behaviors of both the program recipients and the service providers. However, if these

² Many awardees also describe their intervention as being focused on the "community," but their definitions of community vary greatly, ranging from professional communities, to geographic communities, to participant/parent communities. All of the awardees that describe their intervention as being relevant to a particular community are nonetheless targeting individuals who receive services and/or the providers or organizations that deliver them.

programs are effectively implemented, these awardees may achieve greater impact by focusing their interventions on the interaction of these groups rather than just one or the other.

2. Program setting

The awardees have implemented their programs in numerous types of settings—traditional health care environments, patients’ homes, community institutions, and even in virtual settings. Overall, nearly half of the programs are based in more than one setting. More than two-thirds of all programs categorized as provider-based also function in a community, home, or virtual setting. For example, in its Coordinated Health Care for Complex Kids program, the University of Illinois has set out to engage participants “where they are” by implementing the program at community and school-based health centers, in participants’ homes, and through telemedicine tools. This program is considered to be provider-based, community-based, home-based, and virtual.

In contrast, the Learning Individual Needs and Coordinating Care program, led by the Case Medical Center, provides care management for participants at the hospital’s cancer center and in two affiliated community clinics, so the program is fully based in the provider setting. Different program settings may be associated with particular kinds of challenges to and facilitators of implementation. For example, it may be easier for awardees that are implementing home- or community-based programs to recruit patients and keep them engaged than it is for awardees that are implementing provider-based programs in which enrollment depends on people entering the health care system to access program services.

3. Implementing organizations

The organizations that are implementing the HCIA R2 programs span the health care delivery system. Hospitals and primary care clinics are the most common, followed by specialty care clinics. Other, less common implementing organizations include community-based organizations, long-term care facilities, short-term medical respite centers, dental and behavioral health clinics, school-based health centers, emergency medical services, and pharmacies.

Just over half of the awardees have partnered with more than one kind of organization to implement their programs, which suggests that certain kinds of service delivery models, such as those that offer care coordination and/or case management, may necessitate a more integrated approach to care. For example, the Clifford Beers Guidance Clinic, a community-based mental health clinic, is partnering with a local hospital and a community health center to implement its Wraparound New Haven program, which is intended to improve the coordination and integration of behavioral health services, physical health services, and social supports for high-need children and their families.

The number of implementing sites varies widely as well. At one end of the spectrum is VillageCare; its Rango program is virtual, so there are no implementing sites. The program is intended to improve adherence to HIV treatment through the use of an integrated mobile platform and mobile application. At the other end of the spectrum is Community Care of North Carolina, which is implementing its Community Pharmacy Enhanced Services Network in 225

independent pharmacies throughout the state. The purpose of the program is to integrate the medication management strategies used by community pharmacists into their interactions with participants while giving the pharmacists an incentive to address gaps in care.

As the evaluation moves forward, it will be important to consider the diversity in both the nature and number of implementing sites. Programs that are being implemented by numerous and/or different types of organizations are likely to be more complex and thus more difficult to operate than programs with few implementing sites and/or just one type of implementing organization.

4. Target population

The target population refers to individuals—including patients, caregivers, and other community residents—identified by awardees as the intended recipients of program services. Although some interventions focus on providers and on organizations providing services, they are not considered part of the target population. With regard to age, 31 programs target adult or elderly individuals, 7 of which also target children, and the remaining 8 programs target children exclusively. The awardees have defined their target populations in numerous ways, including by payer, health condition, types of care, population health, and other factors. As a result, the target population varies substantially from one program to the next.

Payer type. CMMI requires awardees to target Medicare, Medicaid, and/or CHIP beneficiaries. Although some awardees target individuals directly on the basis of their insurance status, others enroll individuals regardless of their coverage, so an awardee's target population can include individuals with public and/or private insurance. Nearly all of the awardees' programs target Medicaid beneficiaries, and two-thirds target Medicare beneficiaries, but the percentage of each group that the awardee intends to serve varies widely. In its Maximizing Independence at Home program, the Johns Hopkins University is targeting only individuals who are dually eligible for Medicare and Medicaid.

This diverse mix of payer types has a direct bearing on our evaluation. For example, because Medicaid and Medicare populations have different characteristics, programs that target beneficiaries covered by one payer or the other may be implemented differently, or there may be different facilitators of and challenges to implementation. The impact evaluation of programs that target primarily Medicaid beneficiaries may be more challenging with respect to data availability and timeliness compared with programs that target primarily Medicare beneficiaries. In addition, because CMS is responsible for decision making regarding Medicare, whereas state agencies are responsible for decision making regarding Medicaid, there may be payer-related differences in the sustainability and scalability of programs. In addition to targeting publicly insured beneficiaries, 10 programs include privately insured individuals, and 8 include uninsured individuals.

Chronic conditions. Two-thirds of the programs target at least one chronic condition. The most common conditions are cardiovascular and respiratory conditions, behavioral and mental health conditions, and diabetes. Other, less common, chronic conditions include sexually

transmitted infections (STIs), oral health conditions, kidney disease, dementia, and cancer. Nearly one-third of the programs target acute conditions, and about half of these programs also target at least one chronic condition. The acute conditions include acute myocardial infarction, pulmonary embolism/deep vein thrombosis, brain injuries, pneumonia, stroke, and conditions requiring abdominal surgery.

Types of care. Six programs target particular types of health care, including dental health, behavioral health, and other kinds of specialty care. This approach essentially translates into targeting individuals who need or who are receiving certain types of services, as opposed to targeting certain conditions. For example, Washington University's Contraceptive Choice Center program targets women of reproductive age, especially those who are at high risk for unintended pregnancy and the resulting birth. The goal is to reduce these pregnancies by expanding the use of contraception. Similarly, Yale University's Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly program targets individuals who have fallen or who are at risk of falling.

The types of care that programs target are likely to have implications for our evaluation, particularly with regard to the settings in which these programs are implemented and the types of outcomes they attempt to affect. For example, the setting for Washington University's program is the university's Department of Obstetrics and Gynecology, and the outcomes are obstetric and gynecologic outcomes. In contrast, programs that target chronic conditions may span multiple settings and focus on a wider range of outcomes, especially if they target more than one chronic condition.

Population health. Two programs focus on community-based factors associated with population health. The Evans Wellness Cottage, implemented by the Children's Home Society, targets all residents (adults and youth) who live in the Cottage area to improve their access to care. Similarly, the Association of American Medical Colleges' program targets all individuals over the age of 17 who visit a primary care practice site at which the program's eConsult/eReferral decision-support tool for physicians is being implemented. Like programs focused on types of care, programs focused on population health are likely to have implications for our evaluation because population health cuts across multiple conditions and types of care.

Table II.2 provides summary information on the characteristics of HCIA R2 programs. Awardee-level data on the characteristics of HCIA R2 program are presented in Appendix A, Table A.1 and A.3.

5. Enrollment process

The awardees have approached the enrollment process in a variety of ways. They may, for instance, engage with participants actively or passively. In active enrollment (which includes recruitment), the awardee or its partners have direct contact with potential participants through telephone calls, mail, or meetings. If, as a result of this contact, individuals agree to receive services, they are then enrolled into the program. In passive enrollment (which does not involve recruitment), potential participants are enrolled automatically if they meet the program eligibility

Table II.3. Characteristics of the enrollment process

Awardee	Enrollment approach	Precipitating event required for enrollment	Duration of enrollment
AAMC	Passive	No	Open-ended
ACCF	Passive	Yes, use of decision-support tool by provider at participating site	Open-ended
Altarum	Passive	Yes, seeing a participating provider	Open-ended
Amerigroup	Active	No	Open-ended
Avera	Active	Yes, admission to participating long-term care facility	Open-ended
BMC	Active	Yes, attending an initial intake visit	Open-ended
CCC	Passive	Yes, enrollment in transitional care units at participating nursing homes	90 days after discharge
CCNC	Passive, active	No	12 months
CHIIC	Active	No	Open-ended
CHS	Passive, active	No	Open-ended
Clifford Beers	Active	No	Open-ended
Columbia	Active	No	12 months
DMC	Active	Yes, low-acuity visit to the ED ^a	Open-ended
FPHNY	Active	No	Open-ended
Four Seasons	Passive	No	Open-ended
GWU	Active	No	Open-ended
Hopkins	Active	No	Open-ended
Icahn	Active	Yes, physician's determination that patient should receive either (1) inpatient care for a select set of diagnoses or (2) sub-acute rehab	Open-ended
Mesa	Passive	Yes, 911 call for low-acuity component; hospitalization for high- acuity component	Generally 1 encounter; may include a follow-up encounter
Montefiore	Passive	Yes, screening positive on a 5-question screen	3 months or unless services are no longer needed
NACHRI	Passive	No	Open-ended
NHCHC	Active	No	Open-ended ^b
NM	Active	Yes, hospitalization for any cause	12 months
North Shore	Active	No	Open-ended
NYCH+H	Active	Yes, presentation at ED with ambulatory care sensitive condition or by an individual who meets utilization-based criteria	90 days
SCH	Passive	No	Open-ended
U KS	Passive, active	Yes, presentation at ED with heart attack or stroke symptoms for acute care phase; hospital discharge following heart attack or stroke for transitional care management phase	12 months
U NC	Active	No	Open-ended
UCSD	Active	No	Open-ended
UCSF	Active	No	Open-ended

Table II.3 (*continued*)

Awardee	Enrollment approach	Precipitating event required for enrollment	Duration of enrollment
UHCMC	Active	No	Open-ended
UIC	Passive	No	Open-ended
UMich	Active	No	Up to 2 weeks before surgery
UNM	Active	Yes, presentation at ED with neuro-emergent condition	30 days
Ventura	Active	No	Open-ended
VillageCare	Active	No	Open-ended
Wash U	Passive, active	No	Open-ended
WI DHS	Active	No	Open-ended
Yale	Active	No	Enrollment ends after 1 visit from a paramedic, 1 visit from a visiting nurse, and transportation to/from 1 primary care provider visit

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

^aParticipants who have high ED utilization, defined as 5 visits to the ED in a calendar year, can also be enrolled without having experienced the precipitating event of a low-acuity visit to the ED.

^bAlthough the enrollment duration is open-ended, participants are typically enrolled for 30 to 90 days.

criteria. Passively enrolled participants might not be aware that they are enrolled in a program and are receiving or benefiting from program services.

In one-third of the programs, enrollment is based not only on one or more of the eligibility criteria described in Section 4 above, but also on a specified precipitating event such as a 911 call, an emergency department (ED) visit, or a hospitalization. These programs may actively recruit individuals after the triggering event occurs, or they may passively enroll all eligible individuals after the event. Among programs that do not have a precipitating event, other characteristics, such as high service utilization within the past 12 months, become the criteria for enrollment. Eleven programs limit the length of enrollment to a pre-defined period of time, but enrollment in the remaining 28 programs is open-ended. The latter offer services to participants as needed for the duration of the cooperative agreement. Our evaluation of program impacts will be tailored to capture enrollment characteristics such as differences between limited and open-ended enrollment periods. The following examples illustrate a few of the many approaches to enrollment.

The Bundled Payment for Mobile Acute Care Team (MACT) Services Program is based at the Icahn School of Medicine in the Mount Sinai Health System in New York City. Two of the hospital campuses, The Mount Sinai Hospital and Mount Sinai St. Luke's, are implementing the program. The program is based on and expands the Hospital at Home model, which was developed by the Johns Hopkins Schools of Medicine and Public Health. At the beginning of the second program year, MACT staff began accepting patients who needed sub-acute rehabilitation (SAR) services that would typically be offered in a skilled nursing facility. Acute care patients are recruited from EDs and observation units in selected Mount Sinai

hospitals and targeted outpatient practices. SAR patients are accepted by referral from any relevant hospital unit on Mount Sinai's main campus, including the observation unit and the ED. The trigger for enrollment is a physician's determination that an individual should be admitted to the hospital or to a skilled nursing facility, at which point active recruiting begins. The enrollment period is not fixed, but because the program is meant to replace acute inpatient hospitalization for selected conditions, the vast majority of participants are enrolled for about 33 days (an average of 3.3 days for an acute care phase that corresponds to hospital-level care, followed by up to 30 days of post-acute care).).

The Kansas Heart and Stroke Collaborative, led by the University of Kansas, has three phases: an acute care phase, a transitional and chronic care management phase, and a population health phase that will be implemented in the future. The first phase focuses on developing regional systems of care and acute care protocols for stroke and heart attack. Passive enrollment is triggered when an individual is hospitalized for heart attack or stroke at any of the program's 13 participating hospitals. Enrollment in this phase lasts as long as each participant's hospitalization. In the second phase, participants are actively recruited after they have been hospitalized for stroke or heart attack. Enrollment in this care management phase lasts for 12 months. The third phase, expected to begin in early 2016, will target people at high risk of stroke or heart attack for health coaching and other patient education and engagement services.

The Transitioning a Rural Health Network to Value-Based Care program, led by Catholic Health Initiatives, is a care management program that is open to residents who live in rural areas and who have at least one chronic condition (mainly diabetes, hypertension, chronic obstructive pulmonary disease [COPD], and cardiovascular disease). Enrollment is not contingent upon a precipitating event. Instead, health coaches and their assistants at participating critical access hospitals and their affiliated clinics identify eligible individuals and actively recruit them into the program. Health coaches provide care management services, and the enrollment period is open-ended.

C. Service delivery models

The awardees' service delivery models consist of one or more components, which are the core functions of a program. The majority of models consist of more than one component. We developed a list of 17 components that we observed in the 39 programs and applied at least one component to each service delivery model. The sheer range of components underscores the diversity that is characteristic of the HCIA R2 programs overall.

To describe the focus areas of the components, we organized the components into seven groups: care management/care coordination, counseling and health education, health information technology (health IT), practice transformation, the provision of direct care, telemedicine, and pharmacy services. These groups and the components within them are summarized in Table II.4.

Table II.4. Program components in the HCIA R2 service delivery models

Components	Description	Number of Awardees
Care management/care coordination		
Care management, outpatient care coordination, transitional care coordination, integrated care, medical home, and home care	Though different, care management and care coordination are often closely linked. Care management helps patients and their caregivers to manage their medical and mental health conditions. ^a Examples include home care for patients who need medical, nursing, social, or therapeutic care, or help with activities of daily living. ^b Care coordination organizes care across several providers and/or during care transitions. ^c This component also includes integrated care and medical homes.	31
Counseling and health education		
Education and training, facilitated consultation, patient and family engagement, patient navigation, and shared decision making	Education, training, counseling, and/or support provided to patients, families, and/or professional providers who deliver services to program participants. This includes the use of staff, other individuals (including peers and lay providers), or written materials that empower patients and families to become engaged partners in managing their health, in using health care services, and in navigating the health care system.	28
Health IT		
Health IT	Activities focused on developing, deploying, or enhancing health information systems and platforms.	19
Practice transformation		
Evidence-based/clinical practice guidelines, quality improvement/ workflow or process redesign	Activities that improve the delivery of health care services, including the use of data to drive improvement, the redesign of processes, and the provision of care that conforms to guidelines. These activities aim to improve the efficiency of care delivery, the quality of care, and patient safety.	9
Direct care provision		
Direct care provision	The delivery of medical, dental, or mental health care services, often to populations that have had limited access.	5
Telemedicine		
Telemedicine	Services that allow providers, or patients and their providers, to engage in two-way, real-time communication across geographic areas; interactive telecommunications equipment enables the interaction and includes, at a minimum, audio and video equipment. ^d	7
Pharmacy intervention		
Pharmacy intervention	Services include medication reconciliation and/or support for adherence to medication resulting from changes in the current pharmacy or provider setting that may influence workflow, health IT, medication review, patient engagement, and/or care coordination with patients' providers.	3

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Notes: All awardees' primary program components fall into at least one category. Many service delivery models include several primary components that fall into more than one category.

^a Mechanic, Robert. "Will Care Management Improve the Value of U.S. Health Care?" Background paper for the 11th Annual Princeton Conference. Available at <http://healthforum.brandeis.edu/research/pdfs/CareManagementPrincetonConference.pdf>. Accessed January 6, 2016.

^b "Home Care and Hospice Resources." Arlington, VA: The Visiting Nurse Association of America. Available at <http://vnaa.org/home-care-hospice-faq>. Accessed January 6, 2016.

^c McDonald, Kathryn M., Vandana Sundaram, Dena M. Bravata, Robyn Lewis, Nancy Lin, Sally A. Kraft, Moira McKinnon, Helen Paguntalan, and Douglas K. Owens. "Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Volume 7—Care Coordination." Rockville, MD: Agency for Healthcare Research and Quality, June 2007.

^d "Telemedicine." Baltimore, MD: Centers for Medicare & Medicaid Services. Available at <http://www.medicare.gov/Medicare-CHIP-Program-Information/By-Topics/Delivery-Systems/Telemedicine.html>. Accessed January 6, 2016.

Of the 17 components, the 4 most commonly used are health IT (19 programs), care management (18 programs), patient and family engagement (18 programs), and outpatient care coordination (10 programs). (The detailed breakdown of these components is not shown in Table II.4; it is shown in Appendix A, Table A.5). The four most common components appear to be central to the goals of the HCIA R2 initiative; over three-quarters of the HCIA R2 programs include at least one of these four components. This section describes these components, and Chapter III.B explains how the awardees have implemented their service delivery models, along with the challenges they have faced and the facilitators that have helped them in the process.

In many cases, we have distinguished between program components strictly for evaluation purposes. From the awardees' perspective, however, the components are often viewed as a unit, working together to achieve program goals. To see the parts as something separate from the whole may create distinctions that do not exist in the actual implementation process. Readers should also remain mindful of the fact that the same component may play a different role from one program to the next in terms of its contribution to overall impacts, depending on how it operates, its companion components, and the context in which it is implemented. In our evaluation of program impacts on patient outcomes, we will account for the characteristics of service delivery models.

1. Care management

The purpose of care management is to help patients and their support systems to manage their medical and mental health conditions more effectively.³ These services are often delivered to patients with chronic and/or complex conditions that must be managed carefully by providers and by the patients themselves in order to avoid the unnecessary or inappropriate use of acute care and inpatient services. Care management may also include services that extend beyond the health care system, such as social services, which are often delivered by care managers who ensure that patients receive care that addresses their individual needs and who may also provide self-management support, patient education, and social support. Care management can play a role in treating almost any health condition, including cardiovascular disease, kidney disease, diabetes, and cancer, among other chronic conditions; a few programs target patients with acute conditions, such as dehydration, pneumonia, urinary tract infection, stroke, acute lower back pain, or abdominal conditions that require surgery, among other acute conditions targeted.

Like the other program characteristics, care management varies from one program to the next. There are differences in the services offered and in how programs are organized to deliver these services. Nearly all care management components include an assessment of participants' needs, the development of a care plan, and education such as training in self-management, but there is some variation in the comprehensiveness of services. Some programs focus on a range of social support services or referrals, whereas others focus more on the clinical needs of patients. Although care management is distinct from care coordination, they are often linked in practice.

³ Mechanic, Robert. "Will Care Management Improve the Value of U.S. Health Care?" Background paper for the 11th Annual Princeton Conference. Available at <http://healthforum.brandeis.edu/research/pdfs/CareManagementPrincetonConference.pdf>. Accessed January 6, 2016.

Some programs also offer outpatient care coordination, and many others include a limited form of care coordination that is integrated into their care management component. In many programs, nurse care managers or coordinators deliver services. In a few programs, community health workers, clinical care teams, or assistants deliver services. The following examples demonstrate the diversity of the awardees' approaches to care management:

Catholic Health Initiatives is providing care management for participants living in rural areas who have at least one chronic condition—typically diabetes, hypertension, COPD, or cardiovascular disease. Registered nurses and licensed practical nurses serve as health coaches who meet with participants both in person at the clinics in participating critical access hospitals and by telephone to provide patient education, training in self-management, and guidance in setting goals. The health coaches also connect participants to community resources such as transportation services, Meals on Wheels, and smoking cessation programs.

George Washington University's program provides care management for patients diagnosed as HIV-positive, at risk for contracting HIV, or at risk for contracting other STIs. The care management component is currently delivered by community health workers who interact directly with participants to develop health care plans and provide referrals to care. The care management component includes a health needs assessment, education, home HIV and STI testing, and interactive counseling. After the health IT component is fully implemented, some of the care management services will be provided by a web-based system that participants can access at their convenience.

Yale University's Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly (PRIDE) program is intended to reduce falls that contribute to otherwise preventable ED visits, hospitalizations, and 911 calls. Patients are recruited through a combination of strategies including (1) contacting individuals who called for 911 assistance after falling, (2) speaking with ED patients who seek treatment for a fall or who feel at risk for falling, and (3) holding PRIDE education sessions about fall risk prevention at senior centers and town hall events. PRIDE paramedics and visiting nurses provide care management to individuals who have fallen or are at risk of falling. The paramedic first completes an in-home assessment, which covers several aspects of the participant's health status and residential safety, and then schedules an appointment with the participant's primary care provider or connects the participant with Yale's outpatient primary care clinic. The paramedic also schedules a home visit by a nurse from a partnering visiting nurse agency. The nurse completes the second in-home health assessment to determine whether the participant needs ongoing nursing care, physical therapy, occupational therapy, and/or durable medical equipment.

2. Outpatient care coordination

Several programs include outpatient care coordination. The purpose of this service is to organize the care delivered by numerous providers,⁴ including medical providers, oral health providers, behavioral health providers, and/or social service agencies. This function is typically handled by designated care coordinators who communicate with patients, schedule appointments, and facilitate seamless transitions from one service provider to the next. Patients with chronic or complex conditions that tend to involve more than one provider are often good candidates for outpatient care coordination.

The programs that include outpatient care coordination generally offer the same types of services, although there are some differences in how the services are delivered. First, they are provided in at least one of three settings: primary care practices, specialty care clinics, and hospitals. Second, other program components may or may not be implemented in combination with outpatient care. Some programs offer outpatient care coordination and care management as a unit. Other programs offer it in combination with patient and family engagement, patient navigation, health IT, direct care provision, or evidence-based/clinical practice guidelines. The following examples demonstrate the variety of approaches to coordinating outpatient care in the HCIA R2 programs.

The Fund for Public Health in New York is implementing a program that targets individuals with hepatitis C virus (HCV); the goal is to improve cure rates, increase patient satisfaction, and reduce expenses. Services are delivered by outpatient care coordinators assigned by the awardee to participating clinical sites. The coordinators schedule and remind participants about medical appointments, link participants with clinical and non-clinical providers, and complete the participants' insurance authorization forms and related paperwork. Peer navigators support the coordinators by delivering health promotion services and accompanying participants to their appointments.

The National Association of Children's Hospitals is implementing the Coordinating All Resources Effectively (CARE) program to improve the experience of care and reduce stress for children with medical complexity and their caregivers; the program is also intended to reduce overall medical expenditures. The service delivery model consists of several components, including care management and coordination, quality improvement and practice transformation, and education and training. A hospital- or practice-based care coordination team delivers the care management and coordination services as a unit. The composition of the teams varies by hospital and practice site, but in general, they include a nurse care coordinator and other staff such as social workers, medical assistants, or patient navigators. The care team develops an individualized access plan to help the family identify whom to contact for various care needs;

⁴ McDonald Kathryn M., Vandana Sundaram, Dena M. Bravata, Robyn Lewis, Nancy Lin, Sally A. Kraft, Moira McKinnon, Helen Paguntalan, and Douglas K. Owens. "Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Volume 7—Care Coordination." Rockville, MD: Agency for Healthcare Research and Quality, June 2007.

provides 24/7 access to one of its members; and offers care management and transition planning as the child moves from inpatient to ambulatory care.

The University of California at San Francisco is implementing the Dementia Care Ecosystem to improve the quality of life for patients with dementia, improve caregiver satisfaction with dementia care, reduce the total costs of care, delay the time to nursing home placement, and reduce caregiver burden. The program's clinical team—consisting of a nurse, a pharmacist, and a social worker—train, supervise, and provide expert advice to care team navigators (CTNs). Members of the clinical team also refer patients to community resources or to physical and occupational therapists when appropriate. The CTNs coordinate and oversee participants' care by telephone, linking them with the resources they need and triaging questions about medical decision making to appropriate members of the program team. The CTNs also involve members of the clinical team in the participants' care when necessary.

3. Patient and family engagement

The goal of patient and family engagement is to empower patients and families to manage their (or their child's) health conditions and to help them set their own healthy living goals. Services include formal self-management support programs; the collaborative development of care plans, including action plans for addressing chronic conditions such as diabetes, obesity, and depression; and patient/caregiver education, training, and/or incentives to encourage participation. The approach to patient and family engagement is similar in many programs. Awardees are focusing on enhancing the communication between patients and their families, and on providing condition-specific education that enables patients and families to play a more active role in their care. Some programs also provide support services as part of this component.

There are, however, two main differences in how patient and family engagement is being implemented: services are delivered in different settings and by different staff. The settings include clinical facilities (for example, hospitals, primary care centers, specialty care clinics), community facilities, participants' homes, and even virtual settings. In some programs, non-clinical staff such as coaches, community health workers, and health educators reach out to patients and their families, whereas, other programs rely on health care providers to play this role. The following examples demonstrate these differences.

Columbia University is implementing the MySmileBuddy program to give parents of young children a larger role in preventing the progression of early childhood caries. Community health workers meet regularly with parents to assess a child's risk for early childhood caries; teach the parents about the risk of caries; set family goals; regularly evaluate progress toward the goals; and provide social support, toothbrushes, and toothpaste. An electronic application guides the community health workers' interactions with families as they engage them in their homes, at locations in the community, or over the telephone.

VillageCare's Rango program is intended to improve adherence to HIV treatment. The program is a virtual program in which a mobile platform and a mobile application are used to promote the participant's engagement in care and disease self-management. The awardee

hypothesizes that the participants' use of these electronic self-care tools will improve their adherence to HIV treatment and their engagement in, and satisfaction with, their care. The virtual program engages participants through features that facilitate individualized treatment management, connections to other users, education through the provision of health information, and access to community resources.

The Wisconsin Department of Health Services is implementing the Special Needs Program for Children with Medical Complexity (SNP) to reduce rates of preventable hospitalizations and ED visits, shorten hospital stays, enhance access to necessary outpatient services, and lower costs. The program provides care management, care coordination, and patient navigation for children with complex health care needs. The program's care team—physicians, nurse practitioners, registered nurse care coordinators, care coordination assistants, and administrative assistants—engages patients and families in their care. In particular, nurse care coordinators play a large role in educating patients and families about care for the participants' conditions at home and function as the primary points of contact for families.

4. Health IT

The health IT component involves developing, deploying, enhancing, or integrating health information systems, platforms, and electronic tools to improve care. In most of the programs, clinicians and other program staff use electronic decision-support tools to deliver services, and they use health information systems to track these services and referrals. The awardees have also incorporated other electronic platforms into existing EMR systems.

All the programs that have a health IT component also include other components as part of their service delivery models, and the awardees are using health IT to support the implementation of these components. The examples below demonstrate the ways in which health IT is being implemented in combination with other program components.

The American College of Cardiology's SMARTCare program combines health IT with shared decision making to change clinicians' behavior by giving them five electronic decision-support tools to assess treatment options for stable ischemic heart disease at the point of care. The awardee has integrated the tools into the participating practices' EMR platforms. The FOCUS tool incorporates participant-specific information that clinicians use to determine whether ordered imaging meets appropriate-use criteria, and if it does, FOCUS helps clinicians to decide which test is most appropriate for a given participant. The Tonic tool is a web-based application that runs on an iPad through which participants consent to the collection of their health data; clinicians use it to track outcomes reported by participants as they go into and come out of treatment. (The other three tools [IndiGO, ePRISM/eLumen, and patient education materials from Health Dialog] are described in the American College of Cardiology Foundation narrative in Appendix B of this report.)

Altarum's Michigan Caries Prevention Program is a multifaceted intervention designed to improve preventive dental care for Medicaid and CHIP beneficiaries in the state. The program's primary components are health IT as well as training and technical assistance for

pediatric primary care providers and their office staff. The health IT system, now in development, will help medical providers to document the provision of preventive services, serve as a clinical decision-support tool for calculating and tracking patient risk, and facilitate referrals to dental providers who have agreed to accept participants.

The Association of American Medical Colleges is supporting five large academic medical centers (AMCs) as they implement eConsult and eReferral platforms into their EMRs. The program's primary components include outpatient care coordination and health IT. The goals of the program are (1) to enhance the ability of primary care physicians (PCPs) to treat patients by providing guidance and education on conditions that require input from specialists and (2) to change PCPs' behavior by providing them with decision-support tools. The eConsult is an electronic exchange initiated by a PCP who is seeking clinical guidance from a specialist for patients whom the PCP would like to continue to manage. The PCPs use a standardized set of templates to initiate communication with, and capture the guidance received from, specialists. The eReferral templates are used by PCPs at the point of referral. They convey guidance on what information the PCPs should provide to specialists before the referral, and they help PCPs to assess whether the referral is appropriate.

D. Payment reform models

One of the main goals of the HCIA R2 initiative is to develop innovative health care strategies that are financially sustainable after the cooperative agreements end. As part of their agreement, awardees were required to propose payment model innovations that could eventually cover the cost of services rendered under the program. All awardees have proposed preliminary models. Chapter III.D provides an in-depth discussion of the progress that awardees have made toward developing and/or implementing their payment models. This section describes the models as currently envisioned, recognizing that they may evolve as the awardees operationalize them. Although these payment models are as diverse as the delivery service models, they typically fall into one or more of the model types described below and shown in Table II.5. Awardee-specific information on payment models is summarized in the Appendix A, Table A.6.

Shared savings. More than one-third of the awardees are implementing or planning to implement a shared savings model, in which funds saved through more cost-effective care are distributed to providers and payers. The awardees have not specified their methods for calculating shared savings in detail—a critical aspect of such payment models—but they are likely to vary widely. Awardees that target patients with chronic conditions are more likely to use a shared savings approach, possibly because improving the management of chronic care is more likely than improving preventive or acute care to generate higher cost savings during the program period. Most of the awardees that proposed a shared savings model are also proposing to use other payment models as well. For example, Johns Hopkins University plans to develop a shared savings component to encourage home health agencies to adopt its program, in addition to using per capita care management payments.

Table II.5. HCIA R2 payment models

Models	Reimbursement strategies	Number of awardees
Shared savings	Funds saved through more cost-effective care are distributed to providers and payers.	16
Value-based purchasing	Offers incentives for more effective care by paying providers who meet certain performance goals.	15
Fee-for-service	Each provider is either paid an amount per service for a new service that was previously not reimbursable or is using traditional fee-for-service as a base payment together with other incentives such as shared savings or value-based purchasing.	14
Per capita care management payment	Payment is based on a per-member-per-month fee that covers the cost of included services.	13
Bundled payment	Procedures commonly performed in different care settings for a certain condition are grouped to establish the payment to providers of those procedures.	12
Other	Includes unique payment models, such as payment based on implementation or capitated payment for clinical services, that do not fit into one of the above categories.	8

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives through August 31, 2015.

Note: Many awardees use several reimbursement strategies in their payment models; awardees that use more than one reimbursement strategy are counted in several models.

Value-based purchasing. More than one-third of the awardees are implementing or planning to implement a value-based purchasing model, which provides incentives for more effective care by modifying payment to providers according to their performance. For example, Altarum is in the early stages of developing a pay-for-performance model that will reward medical and dental providers according to how they perform on core outcome measures for its dental care program.

Fee-for-service. About one-third of the awardees are implementing or planning to implement a fee-for-service model, in which providers of services offered by the awardee are paid for a certain service. For instance, for each tele-health consultation, the University of New Mexico has proposed a fee of \$600 to \$1,200 that would be paid by participating hospitals. The actual fee depends on the participant's condition and the duration of the consultation.

Per capita care management payment. One-third of the awardees are implementing or planning to implement a per capita care management payment model. These models typically involve a per-member-per-month fee that covers the cost of a set of services. The models are often used to cover care management or preventive care services, which are relatively easy to predict. VillageCare, for example, is planning to implement a per-member-per month service fee to cover the cost of its integrated mobile platform and mobile application, which are expected to improve adherence to HIV treatment.

Bundled payment. About one-third of awardees are implementing or planning to implement a bundled payment model. These models involve grouping procedures commonly performed in different care settings for a certain condition and reimbursing providers for the group of procedures as a whole. All of the awardees using bundled payment models are

implementing them in conjunction with other payment models. For instance, Nebraska Medicine is developing a bundled payment model that covers services provided by the program's telemedicine team, including PCPs, nurses, medical assistants (MAs), dietitians, and ophthalmologists in medical centers and in community clinics. A decrease in ED visits and hospitalizations will offset the payers' costs associated with the telemedicine services. Payers will reimburse providers for telemedicine services at a per capita and per episode rate that is mutually agreed upon; this arrangement would enable payers to share savings with providers.

Other payment models. In addition to these common approaches to payment reform, eight awardees are exploring other payment models that do not fit neatly into the types described above.

- The University of Michigan is partnering with Blue Cross Blue Shield of Michigan to offer incentive payments to high-performing physicians and practice staff who meet certain criteria, including recruiting other surgeons to participate in the program who will use the program's risk assessment tool, assessing their patients' risk, and tracking the physical activity of patients two weeks before surgery. This model is similar to a value-based purchasing model, in which payment is contingent upon meeting performance goals. However, because the University of Michigan is basing payment on the achievement of implementation goals rather than health outcomes, we refer to it as a "pay for implementation" model.
- New York City Health and Hospitals is in the early stages of developing its payment model and intends to build on its existing contracts with payers that include incentives for quality and/or cost savings (such as global risk contracts with some Medicaid and Medicare managed care partners). Although the program may help the awardee to meet its quality and utilization goals for these existing contracts, the awardee reported that it has not yet modified the contracts to cover program services.
- Montefiore Medical Center plans to work with three health plans to develop and implement a case-based payment model to cover its program's care management and behavioral health services. As part of the model, the awardee also plans to tie payment to the implementing sites' performance based on participants' outcomes. This model differs from a traditional per capita care management model because it involves an up-front, lump sum payment. Like most awardees, Montefiore Medical Center is still in the process of developing the payment model. Program leaders noted that the payment model will likely have to operate differently for the pediatric population. The awardee will use program data to further refine the details of these payment models over the course of the cooperative agreement.

The HCIA R2 payment models vary not only by type, but also in complexity. In the simplest model, the whole intervention (single product) is priced on a per-capita monthly basis and marketed to Medicaid and/or managed care organizations and/or providers. A handful of awardees were envisioning relatively simple payment models at the time of this writing. Although the model itself is simple, the awardees must make a strong case that the services sold in this way will save money for the purchaser, which they hope to be able to do by the time their

agreements end. The relevant payers also need to be open to paying for services in this way at a sustainable level.

Other models are more complex in several ways:

- Models that bundle existing medical services with new program services are more complex than those that price the new services separately. Payers will need to feel comfortable that both types of services in the bundle are priced appropriately. The Fund for Public Health in New York is a good example. Two payers (a nonprofit insurance company and a Medicaid HIV special needs plan) are actively partnering with the awardee to conduct research on bundled payment model options for clinical and supportive care for HCV, and they intend to simulate the payment model by using mathematical modeling in Year 3.
- Models that require many sets of prices are more complex than those that have one price for all or a subset of services. For example, the University of Illinois anticipates that some managed care organizations may want to purchase a comprehensive set of products to support care for children and young adults with chronic conditions for a single price; services in the products would include care coordination, mental health services, software, and consumer technology. Other MCOs, however, may want to purchase just one of these services, which means that the University of Illinois would have to set prices for each service. Similarly, Johns Hopkins University, whose model supports in-home care for patients with dementia, must set a price for two sets of per capita payments—one for care management and one to cover clinical support.
- Models that combine numerous types of incentives are more complex than those in which a single payment or incentive structure is used. For instance, a monthly per capita, per diem, or bundled payment is often used in conjunction with shared savings or performance-based payments. In one of the most complex models, Community Care of North Carolina is paying (1) a small per-attributed-life payment to all participating pharmacies, (2) a larger per-attributed-life payment to all participating pharmacies that is modified by value-based performance indicators (such as total cost of care, ED visit rate, adherence to medication), and (3) a payment for each completed comprehensive initial pharmacy assessment. The awardee's goal is to expand the role of pharmacists in chronic care management.

III. FINDINGS FROM THE IMPLEMENTATION EVALUATION

This chapter summarizes findings from a cross-cutting analysis of the first-year implementation experience of the 39 HCIA R2 awardees. The summary is designed to help CMMI understand common successes and failures and, when possible, to highlight strategies for effectively overcoming the first-year implementation challenges. The data for this analysis were derived from (1) a review of quarterly enrollment data provided by the implementation and monitoring contractor and (2) a review of the 39 program narratives. The individual program narratives were developed based on a qualitative analysis of the awardees' applications, self-reports submitted by awardees to the implementation and monitoring contractor covering the first year of the cooperative agreements, and data gathered during initial telephone discussions with awardees and in site visit interviews with frontline staff from selected implementing sites (see Appendix B of this report).

The chapter is divided into four sections. Section A reviews fidelity to design—that is, whether awardees have implemented their programs as planned or have made adaptations—and presents an assessment of implementation progress that is based on enrollment metrics. Section B describes common facilitators of and challenges to implementing the service delivery models in the first year. Section C discusses how awardees use information on program implementation to make decisions about changes to their service delivery models. Section D describes the extent to which awardees have begun to plan for or implement their payment reform models.

A. Fidelity to original program design and indicators of implementation progress in the first year

CMS's ability to determine which models should be expanded and disseminated depends heavily on information about how the models were implemented. To understand this implementation experience, we used the Consolidated Framework for Implementation Research (CFIR) methodology, which incorporates a core set of domains based on a comprehensive and systematic review of the implementation science literature.⁵ CFIR provides a conceptual framework and a consistent typology, terminology, and set of definitions that can be used to identify the drivers of implementation effectiveness in specific contexts and settings.

We reviewed the awardees' progress by using metrics available for all 39 awardees and identified in the CFIR methodology as important determinants of implementation effectiveness. We began by examining aspects of implementation related to fidelity to program design, defined as whether the awardees implemented their programs as designed or whether they adapted them in some way. We then explored why these adaptations occurred in order to identify patterns across awardees or across types of awardees. Design adaptations should not be interpreted as failures; on the contrary, they are the natural and desirable products of an innovative

⁵ Damschroder, Laura J., David C. Aron, Rosalind E. Keith, Susan R. Kirsch, Jeffrey A. Alexander, and Julie C. Lowery. "Fostering Implementation of Health Services Research Findings into Practice: A Consolidated Framework for Advancing Implementation Science." *Implementation Science*, vol. 4, August 7, 2009.

development process. Finally, we reviewed the evidence on implementation effectiveness, as measured by program enrollment and operational months. Because this section presents common successes and failures, we focus on the most salient findings across awardees. Nonetheless, the awardees may have made other, less common design adaptations and experienced implementation delays that are not reported in this section. These adaptations and experiences appear in the individual program narratives, which are based on awardee-level data.

1. Design modifications

In the first year, all awardees operationalized their programs, but they modified them as they identified opportunities to improve their programs in ways that would better serve participants and achieve program goals. We identified seven types of modifications common among the 39 programs: changes to program operations; revisions to the recruiting, referral, outreach, or enrollment processes; modifications to the staffing or management structure and responsibilities; changes in the definition of the target population; revisions to planned IT systems or the development of new systems; changes in the number of implementing sites; and the creation of workaround processes for problematic EMR systems (Table III.1). On average, awardees modified three aspects of their programs, making anywhere from one to six changes (data not shown).

Table III.1. Seven common program modifications and reasons for them

Modification	Primary reason for modification	Awardees	Number of awardees
Refined operations	To improve program operations	Altarum, BMC, CCNC, CHS, Clifford Beers, Columbia, DMC, Four Seasons, GWU, Icahn, Mesa, Montefiore, NM, NYCH+H, SCH, UCSD, UCSF, UHCMC, UIC, U KS, UMich, U NC, Ventura, VillageCare, Wash U, WI DHS	26
Redesigned some factor in the recruiting/ referral/ outreach/enrollment process	To increase enrollment	Altarum, Amerigroup, BMC, CHS, Clifford Beers, Columbia, Four Seasons, GWU, Hopkins, Icahn, NACHRI, NHCHC, NM, SCH, UCSD, UCSF, UHCMC, UIC, U KS, UMich, U NC, VillageCare, Ventura, Wash U, Yale	25
Redefined staffing and/or management responsibilities and/or structure, or adding new staff roles	To better support program operations and meet participants' needs	Altarum, CHIIC, Clifford Beers, DMC, Icahn, Mesa, NM, NYCH+H, SCH, UHCMC, UIC, U KS, VillageCare, Ventura, Wash U, WI DHS	16
Modified the definition of the target population	To increase enrollment or better target the intended population for the intervention	Amerigroup, BMC, Clifford Beers, Columbia, Hopkins, Icahn, NM, UHCMC, UIC, UMich, U NC, UNM, Yale	13
Revised or developed new IT infrastructure or systems	To address unanticipated IT challenges (other than EMR issues)	BMC, CHIIC, CHS, Four Seasons, GWU, Icahn, NACHRI, NYCH+H, SCH, U KS, U NC, VillageCare, Yale	13
Changed the number of implementing sites	To address challenges related to recruiting or contracting with sites, or if the original sites no longer made sense	ACCF, CCC, Columbia, DMC, Four Seasons, GWU, Montefiore, NM, U NC, UNM	10
Developed workarounds for EMR system	To address EMR systems that were incompatible with data/data extraction needs of program	AAMC, ACCF, GWU, NACHRI, SCH, U KS, U NC	7

Table III.1 (continued)

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of program narratives through the fourth program quarter, August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features. Fourteen awardees noted unique program changes that did fit into these categories.

EMR = electronic medical records; IT = information technology

Twenty-six awardees changed their program operations in some way based on early implementation experience suggesting that some aspect of the program either did not work as planned or that it could work better. Because the programs are so distinct, the operational modifications vary substantially from one awardee to the next. For example:

- George Washington University planned to use a mobile, tablet-based data collection system but did not consider that in the field, WiFi availability might be inconsistent; program staff therefore modified the design to permit the use of pen and paper data collection tools.
- Montefiore Medical Center designed its program to provide services to participants of all ages (pediatric, adult, and geriatric), but after implementing the program, the staff found that applying the model to the pediatric population required more on-site support than anticipated. The staff had to engage not only the child participant, but also the child's family, other caregivers, and his or her school. This discovery led the Montefiore staff to modify operations by targeting pediatric participants not program-wide, but at a single site at which more staff are available to provide the required support.

Twenty-five awardees made some type of change to the recruiting, referral, outreach, or enrollment process, usually to accelerate lagging enrollment. Like the operational changes, the exact modification(s) to these processes varies by awardee. Sixteen of them adjusted staffing roles and responsibilities or added new positions. In some cases, changes were made to keep the key staff's workload manageable or to engage the program's partners. In other cases, the staffing changes were made primarily to accommodate the participants' schedules.

Thirteen awardees redefined their target population during the first year of implementation. Twelve awardees did so in hopes of increasing enrollment. For example, the University of Illinois initially planned to target children with a diagnosis of depression or one of three other chronic medical conditions (diabetes, sickle cell disease, and asthma). After the awardee began implementing the program, the staff realized that although depression and other mental health conditions are prevalent in the target population, they are often undiagnosed and difficult to target; the awardee has since eliminated depression as a criterion for eligibility and instead offers mental health promotion services to all program participants. The awardee added another medical condition (prematurity) to its list of targeted conditions in place of depression.

Thirteen awardees modified the plans for their IT systems, and seven had to develop workarounds for EMR systems that did not provide the data they need for their programs. Five awardees—George Washington University, the National Association of Children's Hospitals,

Seattle Children's Hospital, the University of Kansas, and the University of North Carolina—made both types of technology changes. For example, staff at the University of Kansas expected to use a commercial IT tool but found after the start of implementation that no commercial tool could support its needs (such as identifying and tailoring programs for high-risk population, tracking services provided, sharing information securely, and ensuring compliance with Medicare billing rules). The awardee therefore developed its own tool. Program staff also found that extracting data for performance monitoring and for transitional and chronic care management from different EMRs was more difficult, expensive, and time-consuming than expected, forcing the awardee to shift to manual data extraction.

Nine awardees changed the number of implementing sites. Five of them—Four Seasons, George Washington University, Montefiore, Nebraska Medicine, and the University of North Carolina—added implementing sites. Another four programs—American College of Cardiology, CareChoice, Detroit Medical Center, and University of New Mexico—reduced the number of implementing sites. Detroit Medical Center's reduction was the result of a consolidation: one of the four implementing clinics lacked the space needed to effectively run the program, so the awardee consolidated the work into an existing program clinic. This reduction actually expanded service hours for participants by allowing the consolidated site to operate two shifts.

Unexpected operational barriers, hiring delays, and lengthy institutional review board (IRB) review periods stalled implementation for many programs. Fifteen awardees implemented their programs on schedule, but 24 of them experienced some type of delay. The most common (16 awardees each) were (1) operational delays, such as needing more time to plan for the complexity of actually implementing the program or underestimating how long it would take to recruit partners or to integrate new tools into existing workflows; and (2) hiring delays, such as difficulty identifying and recruiting qualified staff or having to put hiring on hold because other program components were behind schedule (Table III.2). Ten awardees were delayed by the protracted development of key program tools, and nine awardees were delayed by IRB approvals, which may be required to protect human subjects depending on the nature of the program. Eight awardees reported delays related to problems contracting with their planned partners or subcontractors.

On average, awardees experiencing delays typically faced two of them. Only one awardee, the National Association of Children's Hospitals, experienced all five types of delays we examined, and another, VillageCare, experienced four types of delays. We found no obvious or striking patterns vis-à-vis delays and characteristics of awardees or programs; for example, we considered whether the amount of the award, as a proxy for a more complicated program, might be correlated with delays, but we found that awardees with large and small awards were both likely to experience delays. Furthermore, the number of delays does not appear to be correlated with progress toward enrollment goals, as some programs that did not experience delays were behind on their first-year enrollment goals; conversely, a few programs that experienced one or more delays were on schedule to meet their first-year enrollment goals.

Table III.2. Common types of implementation delays

Common types of implementation delays	Awardees	Number of awardees
Operational delays, such as needing more time to plan for implementation or recruiting, or to integrate new tools into existing workflows	AACF, Altarum, Columbia, Four Seasons, GWU, Mesa, NACHRI, NHCHC, NM, SCH, UCSD, UHCMC, UIC, U NC, UNM, Yale	16
Hiring delays, such as not finding the right staff for the job, having to rehire because of turnover, or putting hiring on hold because other program components were delayed	Columbia, FPHNY, Montefiore, NACHRI, NHCHC, NM, North Shore, NYCH+H, SCH, UCSF, UHCMC, UIC, U NC, Ventura, WI DHS, Yale	16
Delays in the development of key program tools, such as IT systems or applications	ACCF, Altarum, Columbia, Four Seasons, GWU, Mesa, NACHRI, NM, SCH, UMich, U NC	11
Delays related to IRB approval, such as reviews taking longer than expected or more protocols than expected needed review	FPHNY, Four Seasons, GWU, NACHRI, NHCHC, UCSD, UCSF, UMich, U NC, Yale	10
Contracting delays, such as lengthy negotiations with key partners over legal agreements	Altarum, Columbia, FPHNY, Four Seasons, Mesa, NACHRI, North Shore, UMich	8

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narratives. The counts were not derived from "yes-no" response to questions about specific actions or features.

IT = information technology; IRB = institutional review board.

2. Enrollment as a measure of implementation progress

Few awardees met first-year enrollment goals. Table III.3 presents enrollment statistics for all awardees, showing the variation in progress toward first-year enrollment goals. It should be noted that the enrollment statistics come from self-reported data. Although the implementation and monitoring contractor reviews these data for face validity, internal consistency, and completeness, the enrollment numbers have not been independently verified. In some cases, the reported first-year participant targets differ from the awardees' original projections for first-year enrollment. Based on the available data, six awardees have met or surpassed their first-year enrollment goals. Among the other awardees, there is substantial variation in this measure, ranging from enrolling less than 3 percent of the target (Yale University) to 92 percent (Amerigroup). Overall, 12 awardees have met or exceeded 80 percent of their first-year enrollment goals, another 7 awardees have achieved 50 to 80 percent of their goals, and 19 awardees have achieved less than half of their enrollment goals (four of them have achieved less than 10 percent of their goals).

To assess progress, we classified awardees into three groups based on their success in reaching their first-year enrollment goals; given that enrollment data were loosely defined, unverified, and variable from quarter to quarter, we categorized awardees by using broader thresholds than just over or under 100 percent of the first-year target. We classified four awardees that exceeded 120 percent of their first-year enrollment goals as being ahead of schedule (last column, Table III.3); eight awardees that reached 80 to 120 percent of their first-year targets were classified as being on schedule. The 12 awardees either ahead of or on schedule included those that provide directly funded services and those that provide indirectly funded services. Most of these program have relatively modest first-year enrollment goals, although an

exception is New York City Health and Hospitals, whose first-year target was ambitious at over 32,000 beneficiaries.

Two-thirds of all awardees failed to reach 80 percent of their first-year enrollment targets by the end of the first year; eight of them reached 50 to 80 percent of their target, five reached 30 to 50 percent of their target, and the remaining 13 awardees enrolled less than 30 percent of their first-year target. We classified all of these awardees as being behind schedule.

Table III.3. Year 1 target enrollment and percent of first-year targets met (September 2014–August 2015)

Awardee	Launch date	Operational months (through August 2015)	Year 1 participant target	Year 1 total participants served	Percent of year 1 target met	Assessment of progress, based on these data
AAMC	9/1/2014	12.0	26,420 ^a	15,613	59%	Behind
ACCF	11/4/2014	9.9	14,755	2,264	15%	Behind
Altarum	5/8/2015	3.8	16,049	4,123	26%	Behind
Amerigroup	3/1/2015	6.0	126	116	92%	On schedule
Avera	11/1/2014	10.0	5,300	4,033	76%	Behind
BMC	12/12/2014	8.6	69	86	125%	Ahead
CCC	1/1/2015	8.0	3,432	2,426	71%	Behind
CCNC	3/1/2015	6.0	8,666	— ^d	— ^d	Behind
CHIIC	9/1/2014	12.0	4,000 ^b	5,431	136%	Ahead
CHS	10/1/2014	11.0	1,509	2,308	153%	Ahead
Clifford Beers	12/2/2014	8.9	1,060	470	44%	Behind
Columbia	3/1/2015	6.0	932	114	12%	Behind
DMC	1/20/2015	7.3	1,540	435	28%	Behind
FPHNY	1/15/2015	7.5	1,050	919	88%	On schedule
Four Seasons	9/2/2014	11.9	2,200	973	44%	Behind
GWU	4/28/2015	4.1	3,000	656	22%	Behind
Hopkins	3/2/2015	6.0	450	25	6%	Behind
Icahn	11/18/2014	9.4	145	47	32%	Behind
Mesa	12/1/2014	9.0	5,137	3,824	74%	Behind
Montefiore	2/9/2015	6.7	975	1,228	128%	Ahead
NACHRI	5/1/2015	4.0	5,681	1,343	24%	Behind
NHCHC	3/2/2015	6.0	417	228	55%	Behind
NM	12/20/2014	8.3	520	254	49%	Behind
North Shore	11/17/2014	9.4	233	170	73%	Behind
NYCH+H	9/1/2014	12.0	32,196	28,672	89%	On schedule
SCH	2/1/2015	6.9	310	205	66%	Behind
U KS	3/1/2015	6.0	630	481	76%	Behind
U NC	2/23/15	4.2	2,024	288	14%	Behind
UCSD	1/19/2015	7.3	4,000	416	10%	Behind
UCSF	3/31/2015	5.0	499	41	8%	Behind
UHCMC	2/19/2015	6.3	729	406	56%	Behind
UIC	12/1/2014	9.0	3,000	1,034	35%	Behind
UMich	9/15/2014	11.5	501	561 ^c	112%	On schedule
UNM	5/4/2015	3.9	1,258	107	9%	Behind
Ventura	9/1/2014	12.0	800	725	91%	On schedule
VillageCare	4/1/2015	5.0	981	1,056	108%	On schedule

Table III.3 (continued)

Awardee	Launch date	Operational months (through August 2015)	Year 1 participant target	Year 1 total participants served	Percent of year 1 target met	Assessment of progress, based on these data
Wash U	1/8/2015	7.7	352 ^e	341	97%	On schedule
WI DHS	9/1/2014	12.0	445	403	90%	On schedule
Yale	3/25/2015	5.2	1,600	42	3%	Behind

Source: Enrollment data from the implementation and monitoring contractor, fourth program quarter, through August 2015.

Note: Enrollment data are self-reported and have not been verified. The Year 1 participant target is based on summing the direct and indirect participant target numbers for awardees that target both types of participants. Similarly, the Year 1 total participants served reflects both direct and indirect participants for awardees that target both types. This calculation counts indirect participants and direct participants, not the number of unique participants, so a limitation of this approach is the potential for over-counting participants because some are counted as both direct participants and indirect participants. Chapter II provides data on the types of participants targeted by each awardee.

^aFor AAMC, we report only direct participants in the numerator and denominator for the calculation of whether awardee met its first-year target enrollment. We also report only the target for direct participants. The awardee is not reporting indirect program participants.

^bAccording to their quarterly reports, CHIC and Montefiore could report only their direct participant targets. Given that the indirect target numbers were not available, we are reporting only direct participants in the numerator and denominator for the calculation of whether awardees met their first-year target enrollment so as not to distort their progress.

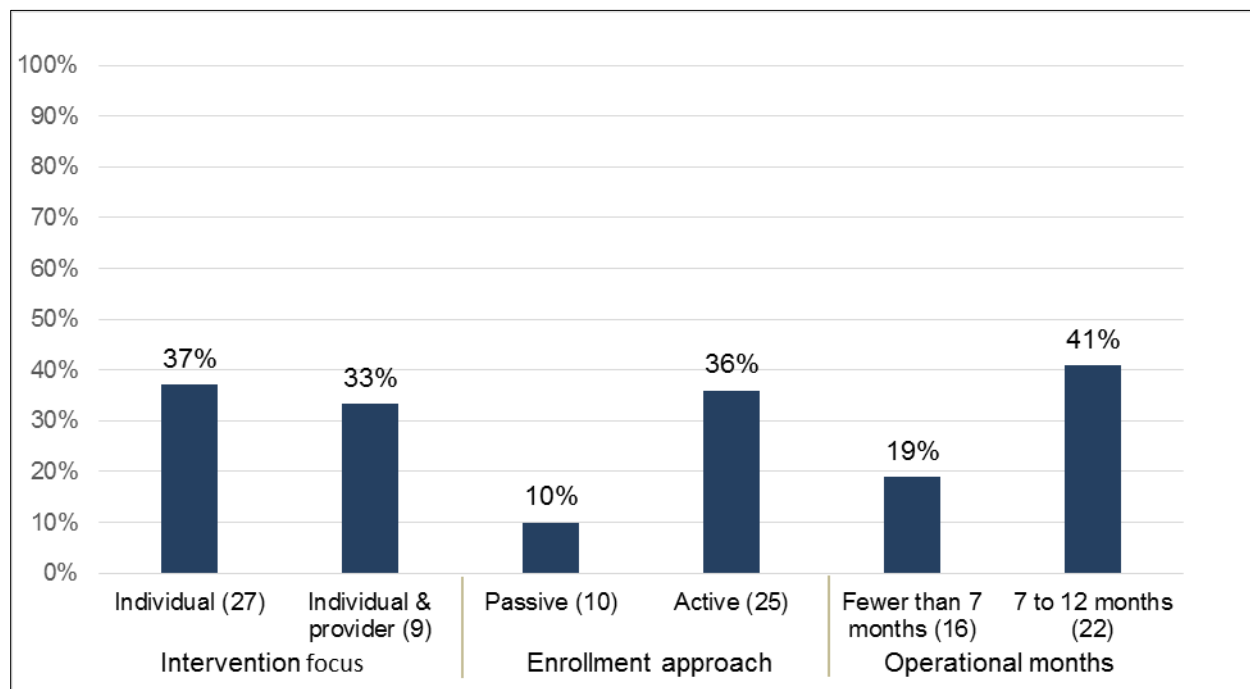
^cAlthough UMich is technically on pace with its original enrollment goals, the large majority of participants are from one site—a site that implemented the program two years before the awardee received its cooperative agreement.

^dCCNC has reported to the implementation and monitoring contractor the number of *attributed* participants, not the number of direct program participants served, defined as the total number of unique participants who have received services directly from a pharmacy participating in the HCIA R2 initiative. We do not have an estimate of the number of direct participants served, and CCNC does not have any indirect program participants. Evaluators on the site visit team reported that the awardee is behind schedule in terms of meeting its first-year participant target.

^eFor Wash U, we report only direct participants in the numerator and denominator for the calculation of whether awardee met its first-year target enrollment so as not to distort its progress. We also report only the target for direct participants. The number of direct participants served in the first year was informed by our site visit. The awardee noted that indirect participants are double counted in the calculation of participants served and is working with the implementation and monitoring contractor to correct the number of indirect participants served.

In the first year, awardees that have used active enrollment approaches and that have been operating longer are more likely to be on or ahead of their enrollment target. To understand the potential drivers of enrollment performance, we examined the variation in progress across several program characteristics among awardees that are on or ahead of their first-year enrollment target (Figures III.1 and III.2). These characteristics are (1) intervention focus (individual versus provider), (2) enrollment approach (active versus passive), (3) type of participants (direct versus indirect), (4) target population (Medicare, Medicaid, or other payers), and (5) operational months. It is important to note that the small number of awardees in each of these categories makes it difficult to draw conclusions about the relationship between program characteristics and enrollment; in fact, given concerns about interpreting patterns based on small numbers of awardees, we excluded categories that had three or fewer awardees. The findings presented in this section are meant to highlight potentially fruitful areas for further study, not to act as firm conclusions at the end of the first year.

Figure III.1. Percentage of awardees on or ahead of enrollment target by intervention focus, enrollment approach, and operational months



Source: Data file from the implementation and monitoring contractor, fourth program quarter, August 2015.

Note: Categories with three or fewer awardees were excluded, given concerns about interpreting patterns based on small numbers of awardees. The excluded categories are the intervention focus of *provider-only* and the enrollment approach of *active and passive*. CCNC was also excluded, so no grouping sums to 39 total awardees. Enrollment data are self-reported and have not been verified.

Although intervention focus—that is, whether interventions target individuals or providers—appears to play a minor role, if any, in an awardee’s enrollment progress, the reverse is true for enrollment approach and operational months. Specifically:

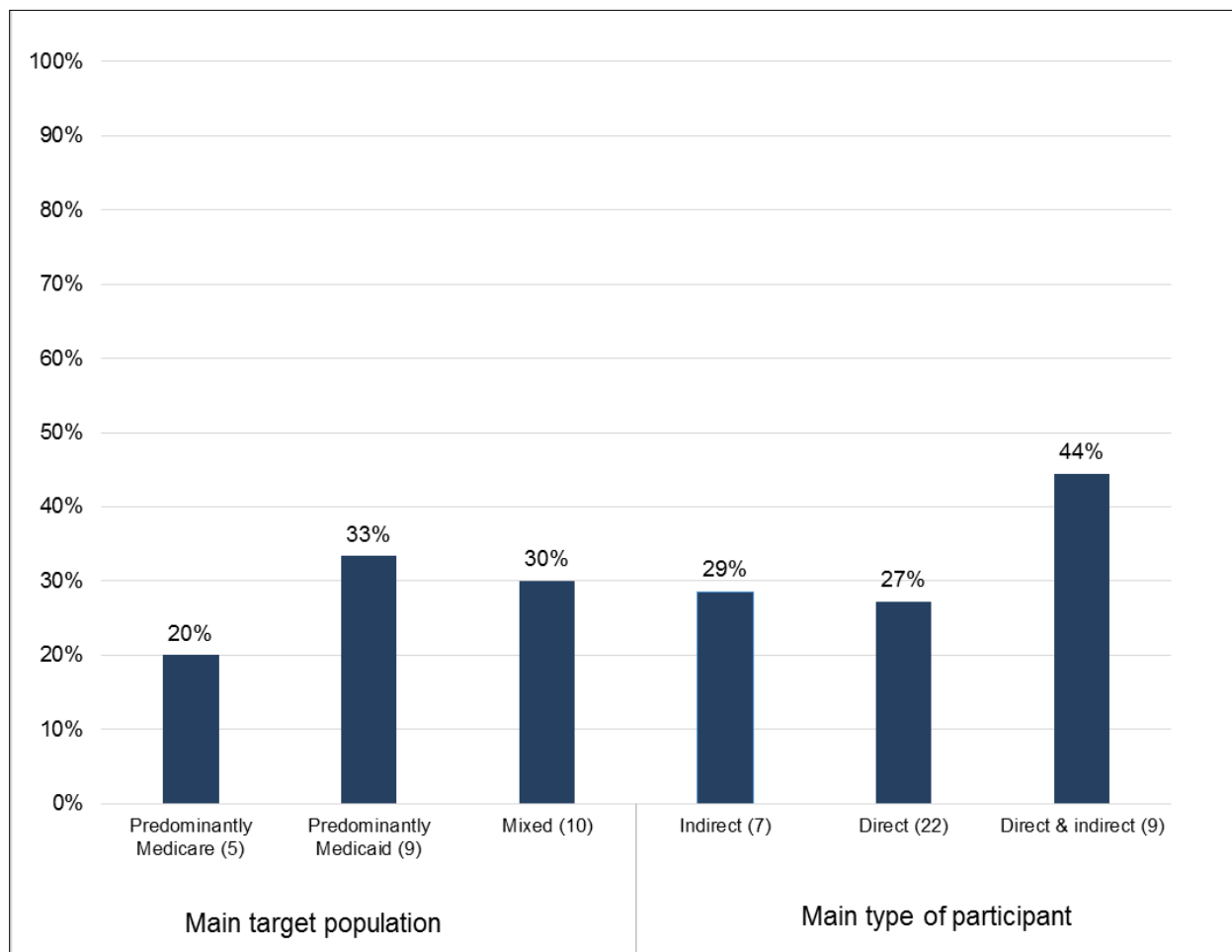
- **Awardees that actively enroll participants are more likely to be on or ahead of their first-year enrollment targets than those who enroll participants passively.** Based on the fourth-quarter data, 9 of the 25 awardees that use active enrollment (36 percent) are on or ahead of schedule, compared with only one of the 10 awardees that enroll participants only passively (Figure III.1). However, programs requiring active enrollment also tend to have smaller enrollment targets on average.
- **Not surprisingly, the findings suggest that programs that have been operating longer are more likely to have met their first-year enrollment targets than those that have been operating for a shorter period.** Of the 22 awardees that have been operating their programs for 7 to 12 months, 9 of them (41 percent) are on or ahead of schedule, compared with 3 of the 16 awardees (19 percent) whose programs have been operating for fewer than seven months.

No clear patterns emerge when we examined participants by primary payer or by whether they are receiving mostly directly or indirectly funded services. To assess the association between awardees that have made the most enrollment progress and the target population, we assigned awardees to the predominantly Medicare category if 60 percent or more of their direct participants are covered by Medicare. We applied the same rule to the Medicaid category. If direct participants did not reach the 60 percent threshold for either of these payer groups, we assigned them to the “mixed” group. Twelve awardees did not report direct participants or did not report a payer type for their participants, so we could not analyze the association between their enrollment progress and payer type. For type of participant (direct versus indirect), we assigned awardees to the direct participant category if 50 percent or more of their participants receive mostly directly funded services (we also used this threshold to assign awardees to the other categories shown in Figure III.2). Figure III.2 shows that awardees serving predominately Medicaid participants and awardees serving both direct and indirect participants are faring slightly better in meeting enrollment targets. Overall, there are few differences between awardees along these dimensions, although it is worth noting that the small number of awardees in some groups makes it difficult to draw conclusions from the findings.

Given the first-year enrollment results, it is not surprising that the most common implementation challenge reported by awardees was identifying, recruiting, and/or enrolling the target population; the findings further suggest that this type of challenge might have been overcome through clearer communications between program staff and referral partners and between individuals in the target population and program recruiters. Thirty-four awardees encountered this challenge; most aspects of the challenge are unique to an awardee’s program, although some common problems emerged. For example:

- **Referral process.** Five programs (Four Seasons, Mount Sinai, Johns Hopkins University, North Shore, and the University of Kansas) had trouble with their planned referral processes. For example, many of the patients referred met clinical referral guidelines but not other requirements such as enrollment in a particular type of insurance (such as Medicare) or residing in a certain, limited geographic area.
- **Language and cultural barriers.** Three awardees (the American College of Cardiology, Children’s Home Society, and the University of California at San Francisco) experienced recruiting and enrollment delays for two reasons: (1) materials related to these functions were available in English only, and a large proportion of the target population needed materials in another language, or (2) because the awardee did not have enough staff fluent in other languages to meet the needs of the population. In addition, at the University of California at San Diego, the largely Hispanic target population at some implementing sites may have viewed health coaches as more of an intrusion than a helpful resource, and some health coaches are not bilingual.

Figure III.2. Percentage of awardees on or ahead of enrollment target, by target population and type of participant



Source: Data file from the implementation and monitoring contractor, fourth program quarter, August 2015.

Note: Enrollment data are self-reported and have not been verified. Analysis of main target population (predominantly Medicare, predominantly Medicaid, or mixed) excluded 12 awardees that did not report a payer type. The *predominately other* category for the main target population, a category with fewer than three awardees, was excluded, given concerns about interpreting patterns based on small numbers of awardees; CCNC was also excluded, so no grouping sums to 39 total awardees.

- Other access barriers.** The staff of all three awardees (Columbia University, the University of Michigan, and the University of Illinois) found it difficult to enroll people because of socioeconomic barriers; given the life circumstances of the target populations, program staff perceived them as having other priorities. At the University of California at San Diego, the low-income participants who make up target population sometimes had transportation problems that prevented them from participating in follow-up visits. Washington University could not offer services completely free of charge as it did in a predecessor program that the awardee used as a model, so this constraint impeded enrollment. At Columbia University, a

few families were reluctant to enroll because they mistakenly thought that the program would cost them money even though it is free. The staff of two awardees (the American College of Cardiology and CareChoice) realized that the consent process required for enrollment was either burdensome or unclear, causing delays and confusion.

Most of these enrollment challenges are related to miscommunication, suggesting that better communication at the outset might have improved enrollment. Good places to start include clarifying with referral partners which people qualify for programs, being aware of the language spoken by target populations and developing strategies to communicate with them, and explaining whether participants must pay for any services. In consultation with their project officers, some awardees have begun to make these types of changes to address enrollment challenges.

Awardees responded to outreach, referral, and enrollment challenges in a variety of ways but noted that for some challenges, there are no obvious offsetting strategies. The awardees worked hard to identify ways to overcome enrollment challenges. For example, to address delays in getting referral partners on board, the awardees engaged with their partners more fully to both strengthen their relationships and more clearly delineate the workflows necessary for a seamless enrollment process. Some awardees also helped their partners by offering enhanced implementation training and technical assistance. In response to recruiting challenges and the target population's weak buy-in, awardees revised their eligibility criteria, expanded or otherwise enhanced their implementing sites, adjusted their referral processes, and revised enrollment procedures. For some challenges, however, the strategies are not as obvious. For example, as noted in Table III.2, securing IRB approval has been time-consuming for many awardees, nine of which noted that it slowed enrollment. Because the IRB process is outside their control, awardees had to delay programs until they had necessary approvals.

B. Facilitators of and barriers to implementing service delivery models

This section describes the factors that have facilitated or impeded the awardees' ability to effectively implement their service delivery models with their available staff during the first 12 to 16 months of the cooperative agreements (from September 2014 through December 2015, depending on the timing of the site visit). CMS can use this information to monitor the awardees' progress in addressing early implementation challenges and to identify opportunities for targeted technical assistance.

For this analysis, we tailored the CFIR methodology to the HCIA R2 implementation analysis and used it to synthesize the individual awardee narratives in Appendix B of this report, organizing our findings into four domains that can influence implementation:

1. **Underlying design features in the awardees' programs.** The codes in this domain reflect features of the program or program components that may facilitate or impede successful implementation. These features are often determined during the program design phase and include such subdomains as the perceived relative advantage of the program, its adaptability, and its simplicity (Section III.B.1).

2. **Process-related factors.** Codes in this domain reflect factors in the process through which the program or program components are executed and that facilitate or impede successful implementation. The most common subdomains in this area are staff engagement, participant engagement, and stakeholder engagement (Section III.B.2).
3. **Inner setting.** Codes in this domain reflect the characteristics of the implementing organizations that may facilitate or impede the implementation of the program or a program component. Examples include the level of support from, and the style of, an organization's leadership, the structure and characteristics of awardee and program teams, and an organization's capacity and infrastructure for supporting the use of health IT (Section III.B.3).
4. **Environmental factors.** Codes in this domain reflect the factors in the environment in which the implementing organizations are located that may facilitate or impede the implementation of the program or a program component. Examples of external factors include the health care delivery system in which the program operates as well as unanticipated participant needs and the potential resources for meeting them. External factors are usually outside the immediate control of the awardee (Section III.B.4)

The sections that follow provide a high-level overview of the facilitators and challenges associated with the implementation of service delivery models, as reported by at least 4 of the 39 awardees for each of the four CFIR-related domains. These awardees experienced many different combinations of facilitators and barriers, and in some instances, they reported both facilitators and challenges within the same CFIR-related domain or subdomain. In other cases, the facilitators and barriers reported by awardees cut across these domains. When information was available, we also provide examples of the strategies awardees have developed to overcome common implementation challenges. All information reflects the awardees' early implementation experience through December 2015 (depending on the timing of the site visit).

1. Design features that influenced the implementation of service delivery models

Three program design features have emerged as the most common influences on the early implementation of the awardees' service delivery models: (1) the relative advantage of the program over the standard delivery of care, as perceived by program staff and other stakeholders; (2) the adaptability of program components; and (3) the simplicity of the intervention. Table III.4 summarizes these features, shows how they are important to effective implementation, and lists the awardees that cited them as influences.

Table III.4. Design features that influenced the implementation of service delivery models

Design feature	Description	Importance for effective implementation	Awardees	Number of awardees
Staff's and stakeholders' perceived relative advantage	Relative advantages such as filling unmet needs and incorporating new processes that improve staff satisfaction and the quality and cost of care	Strengthens staff and stakeholder buy-in to the program	AAMC, Amerigroup, Avera, BMC, CCC, CCNC, Clifford Beers, Columbia, DMC, FPHNY, Four Seasons, Hopkins, Mesa, Montefiore, North Shore, NM, SCH, UHCMC, UIC, U KS, UMich, UNM, VillageCare, Wash U	Facilitator: 24
			Avera, AAMC	Barrier: 2
Adaptability	Intervention's ability to meet staff's and participants' needs	(1) Promotes integration of the program into organizational and implementing site characteristics and processes, (2) facilitates alignment with staff and participant preferences, and (3) enhances staff's ability to develop strategies to overcome implementation challenges	ACCF, Altarum, Amerigroup, Avera, BMC, CHS, Clifford Beers, Columbia, FPHNY, Hopkins, Icahn, NACHRI, SCH, UCSF, UHCMC, UIC, UMich, U NC, Ventura, VillageCare, WI DHS	Facilitator: 21
			CCNC	Barrier: 1
Simplicity	Perceived ease of implementation due to time required, scope, process, clarity, or disruptiveness	Promotes staff and participant engagement	Columbia, Montefiore, UCSF, U KS, UMich, VillageCare	Facilitator: 6
			ACCF, BMC, CCNC, FPHNY, GWU, Mesa, NACHRI, NM, UCSD, UHCMC	Barrier: 10

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of program narratives through the fourth program quarter, August 31, 2015

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from “yes-no” responses to questions about specific actions or features.

a. Perceived relative advantage

The perceived relative advantage or need for the program over the standard delivery of care was a critical driver of stakeholder and staff acceptance of the program, and it has strengthened their motivation to implement services. The program managers and staff at 24 awardees perceive their programs as having an advantage over the standard delivery of care or over what the organization was doing before the HCIA R2 program. Several awardees feel this way because the program is filling the previously unmet needs of specific populations. Other perceived advantages include improvements in the quality of care, an increase in provider efficiency, and reductions in the cost of care. For example:

- At the University of Illinois, frontline and administrative staff were motivated to participate because they see the program as providing unique and necessary services, including social services, for their participants—poor and minority children and adolescents with chronic

conditions. As one program leader noted, “Not a lot of folks know how to work with this population, and the Medicaid department and the [managed care organizations] here are recognizing they need to create partnerships with groups like [the University of Illinois] to be able to work with this population.”

- At Avera, some clinicians at long-term care facilities see a real need for the program’s telehealth services in terms of improving the quality of care, reducing the time that patients must wait for services, and eliminating the need to transport patients to their primary care providers; these perceived advantages motivated them to participate in the intervention. Other clinicians view the transitional care coordination component as a potential threat to their relationships with patients because it puts the awardee team members, rather than the primary care physician, in a central role managing resident care. This perceived threat was a barrier to these clinicians’ participation.
- Providers at two awardees, Johns Hopkins University and North Shore, reported that the home visits conducted as part of the intervention are enabling better patient assessments and giving them the information they need to provide higher quality care than was possible in the absence of home visits.
- At Four Seasons, referring clinicians are willing to participate because the program saves them time by allowing them to hand off some duties, such as difficult conversations or psychosocial issues, to program staff who are skilled at handling these issues. The program also reduces the providers’ costs of care by operating weekly palliative care clinics in existing specialty clinics.

b. Adaptability

The adaptability of program components has facilitated effective implementation by enabling program managers and frontline staff not only to develop strategies for overcoming implementation challenges but also to tailor the intervention to organizational, staff, and participant needs. Twenty-one awardees leveraged the adaptability of their original designs to make changes in staffing structures or care processes, or to develop other strategies that support effective implementation while maintaining the intervention’s core elements. The most common adaptations were made by program managers and frontline staff, who adjusted program processes in response to circumstances in the implementation setting or to the needs and preferences of participants. For example:

- Input from community health workers led to a number of adaptations in Columbia University’s program. Although the awardee envisioned community health workers meeting with parents in their homes, the workers reported that some families were not comfortable with this and that children in some families spend more time with a caregiver other than a parent. As a result, the community health workers now meet with participants at any location in which the families feel comfortable and include caregivers in addition to parents.
- Intervention adaptability facilitated implementation for Amerigroup and the Clifford Beers Guidance Clinic. For example, managers tailored processes to the participant’s preferences

by giving program staff the flexibility to schedule meetings during weekends and nights, and by offering them time off during the day to compensate.

- Based on emerging needs in the early implementation of its program, VillageCare shifted its model from care management to self-care and revamped its staffing structure accordingly by eliminating the role of care managers and replacing them with program liaisons and health coaches.

Other ways in which awardee leaders and staff have leveraged the adaptability of their interventions are woven throughout this report in the examples of strategies developed by awardees to overcome implementation challenges.

c. Simplicity

The less complex the intervention—in terms of time, process, or content—the fewer challenges during early implementation. An intervention can be characterized as simple if it is easy to implement with little training or support. In contrast, an intervention may be perceived as complex if it includes many components or care processes with many steps, requires a lot of time to deliver, or is relatively difficult to understand or explain to others. Interventions can fall anywhere on the complexity continuum.

Six awardees reported that the relative simplicity of their interventions facilitated implementation, noting specifically that the intervention was easy to understand and explain to patients. For example:

- Staff at the University of Michigan described the “prehabilitation” program as easy to understand. It offers participants tools for pre-operative cardiovascular and respiratory exercises, as well as information on smoking cessation, nutrition education, and stress reduction. One surgeon said that it takes just 90 seconds to describe the program to patients. Staff at one practice reported that giving patients the pre-operative kit and explaining its contents (a pedometer, a spirometer, and educational material) and the patient tracking tool takes only six to seven minutes.

Challenges related to the complexity of an intervention, noted by 10 awardees, were more common. The most typical challenge was the time required to administer assessment tools. Program staff are concerned that this function has cut into the time available to provide direct services. In addition, the complicated nature of educational and support materials in complex interventions hindered the effective implementation of program services. We describe examples of these challenges and the strategies some awardees used to mitigate them:

- The staff at Boston Medical Center’s program, which helps families that have children with complex medical needs to coordinate social, educational, financial, developmental, behavioral, and medical services, said that the initial multidisciplinary intake and assessment required two one-hour appointments. These appointments, though a big commitment for participants, still did not give providers enough time to acquire the information they need from families. To overcome this challenge, the awardee started scheduling pre-intake

telephone calls or home visits and has divided the staff between the two assessment visits rather than deploying the full care team to both as originally designed. The nurse care coordinator and physician now do a medical history and explain care planning during the first appointment; the social worker and family navigator and, if necessary, the psychiatrist, developmental behavioral physician, and nutritionist join for the second appointment.

- Nebraska Medicine, which provides remote patient monitoring for participants with diabetes after hospital discharge, experienced logistical challenges related to packaging, delivering, and installing monitoring equipment in participants' homes. In response, the awardee is exploring the option of having external vendors manage the installation.
- The Fund for Public Health in New York discovered that its health promotion materials were too complex and inappropriately worded for the target population, leading the awardee to contract with a literacy specialist to revise the materials.

2. Process-related factors that influenced the implementation of service delivery models

Three common process-related factors—clinical and non-clinical staff engagement, participant engagement, and other stakeholder engagement—are important to the effective implementation of service delivery models. Table III.5 shows these factors and gives examples of how each has facilitated or impeded program implementation. The process-related facilitators and barriers that awardees encountered most often are discussed below, as are the strategies that awardees used to overcome them.

a. Staff engagement

Awardees engaged staff in the implementation of program services by (1) tapping in to their personal commitment to and their belief in the program's benefits, (2) leveraging program champions at the implementing sites, (3) building staff capacity, and (4) integrating non-clinical staff into existing clinical practice. Thirty one awardees reported that strong staff engagement has facilitated program implementation; they also described effective processes for involving the appropriate individuals in service delivery or in the use of intervention components. In addition, the awardees named four ways to achieve strong staff engagement and buy-in, which are critical to the effective implementation of service delivery models and to ensuring that participants receive program services as intended.

First, 17 awardees noted that implementation is facilitated when staff are personally committed to providing high quality services to populations in need and when they believe in the program's value and potential benefit for participants. For instance:

- At Amerigroup, staff at all levels appear to be committed to the program's success and were motivated to participate because they believe strongly in the potential benefits of intensive coaching services for youth who are about to transition out of foster care. They also believe that the knowledge youth gain about what services they need and how to access them will result in better health and social outcomes, and lower costs than if youth did not have the coaching.

Table III.5. Process-related factors that influenced the implementation of service delivery models

Process factor	Description	Examples of facilitators	Examples of barriers	Number of awardees
Staff engagement	Getting buy-in of staff (after hiring) directly involved in program implementation	<ul style="list-style-type: none"> • Tapping into staff's commitment and beliefs that the program has benefits • Leveraging program champions to motivate and support colleagues • Building capacity through high quality training, supervision, and support • Integrating non-clinical staff into care teams and clinical practice, and distributing responsibilities accordingly 	<ul style="list-style-type: none"> • Staff's competing priorities • Unclear definitions of program services, care processes, or staff roles and responsibilities • Ingrained habits, beliefs, and care philosophies • Staff burnout and heavy volumes of work • Implementation delays • Inadequate staff training • Turnover in staff who implement the program • Burdensome data recording and reporting requirements 	<p>Facilitator: 31 AAMC, ACCF, Altarum, Amerigroup, Avera, BMC, CCC, CCNC, Clifford Beers, Columbia, DMC, FPHNY, Four Seasons, Hopkins, Mesa, Montefiore, NACHRI, NM, North Shore, NYCH+H, UCSD, UIC, UHCMC, U KS, UMich, U NC, UNM, Ventura, VillageCare, Wash U, WI DHS</p> <hr/> <p>Barrier: 26 ACCF, Altarum, Avera, CCC, CCNC, CHIIC, Clifford Beers, Columbia, Four Seasons, GWU, Mesa, Montefiore, NACHRI, NHCHC, NYCH+H, UCSD, UHCMC, UIC, U KS, UMich, U NC, Ventura, VillageCare, Wash U, WI DHS, Yale</p>
Participant engagement	Ensuring that participants receive program services and benefits as intended	<ul style="list-style-type: none"> • Meeting participants' needs and accommodating their preferences • Staff rapport with participants 	<ul style="list-style-type: none"> • Difficulty communicating the value of program services • Stigma related to sensitive health topics 	<p>Facilitator: 17 Amerigroup, Avera, CCC, CHIIC, Clifford Beers, Icahn, Montefiore, NM, Columbia, UCSD, UHCMC, U NC, UMich, Ventura, VillageCare, Wash U, WI DHS</p> <hr/> <p>Barrier: 11 ACCF, Amerigroup, CHS, FPHNY, GWU, Hopkins, Icahn, Mesa, Montefiore, VillageCare, Yale</p>
Stakeholder engagement	Attracting and involving people and organizations not directly staffed on the program, but important for effective program implementation	<ul style="list-style-type: none"> • Fostering relationships with community and other partners to support implementation • Leveraging reputation of partners 	<ul style="list-style-type: none"> • Differences in care philosophies • Competing priorities 	<p>Facilitator: 18 Avera, Altarum, CHS, CCNC, Columbia, Four Seasons, FPHNY, GWU, Icahn, Mesa, NM, North Shore, SCH, U KS, UMich, VillageCare, WI DHS, Yale</p> <hr/> <p>Barrier: 10 Altarum, Amerigroup, CHS, Clifford Beers, Columbia, NACHRI, SCH, UCSF, UIC, Ventura</p>

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of program narratives through the fourth program quarter, August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in individual awardee program narratives. The counts were not derived from “yes-no” responses to questions about specific actions or features. The table includes only examples of facilitators and barriers reported by four or more awardees.

Second, 15 awardees commented on the importance of having program champions at the implementing sites who can spearhead broad staff engagement. For example:

- Altarum program leaders require the implementing sites to identify an oral health champion who can both encourage site staff to implement the intervention and lead the data collection to monitor implementation. The awardee did not specify the level of staff that is most appropriate for this role and has seen sites select office managers and physicians as champions. Regardless of the level, the oral health champion plays a critical role in implementing the intervention.
- At the University of Michigan, staff at one practice noted that their surgeon champion encouraged buy-in by actively promoting the program and regularly emailing the staff, urging them to use the web-based tool to assess participants' risk for poor surgical outcomes. Practices without a champion are having a harder time with implementation.

Third, 14 awardees pointed to the importance of building capacity by providing training and additional support to non-clinical and clinical staff as a way of engaging them in service delivery. For example:

- At the American College of Cardiology, program leaders and vendors provided on-site training and implementation support to sites before the program was launched. The awardee also designated quality managers at each site to help the staff to respond to implementation challenges.
- The Clifford Beers Guidance Clinic's training program for care coordinators has facilitated service delivery by giving all team members 100 hours of training on both its wraparound model of care and common chronic conditions before they work with families. Care coordinators said that the training was very valuable, and they expressed confidence in their ability to work with families despite varying levels of previous experience.

Fourth, nine awardees noted the importance of integrating non-clinical staff into existing clinical practice. This arrangement has supported the delivery of new care processes by helping to educate clinical staff about the intervention, allocating responsibilities among care team members, and enabling the provision of new services. For instance:

- The University of New Mexico reported that including non-clinical staff in hospital teams was a key facilitator of the implementation of tele-health consultations. The programs' nurse educators not only assess hospital capacity for treating neuro-emergent conditions locally (as opposed to transferring cases to a tertiary center), but also give on-site training to hospital staff on how to use the tele-health consultation technology. By walking clinical staff through cases involving patients with a stroke or traumatic brain injury, nurse educators increase the hospitals' confidence in treating these types of patients locally via tele-health technology. Perhaps the biggest resource for hospitals is the awardee's nurse reviewer, who acts as the first line of communication between hospitals, the IT developer, and the awardee. This full-time staff person provides technical assistance to staff in rural hospitals, offers guidance on

when a tele-health consultation is appropriate, and receives feedback from hospital staff on the tele-consult process, which he or she then conveys to the IT developer.

Awardees have faced a large, diverse set of challenges as they worked to engage staff and implement their programs. Twenty six awardees pointed to insufficient or uneven staff engagement as a barrier to program implementation, although the reasons for this vary from one awardee to the next. For example, some awardees reported that other priorities or heavy workloads competed with program activities for staff time. Other awardees found that the ingrained work habits of providers may not be congruent with program processes and goals. Other issues that have affected staff engagement include implementation delays, inadequate training, lack of clarity on staff roles and program services, turnover, and burdensome data recording and reporting requirements.

Of all the barriers to staff engagement, awardees most often cited competing demands for the clinical and nonclinical staff's time. Although the awardees have little control over these demands, they still invested in a variety of strategies to put program priorities on par with the staff's other priorities—at least relatively speaking. For instance, the awardees devoted more time to in-person and group meetings with clinical and non-clinical staff to explain the program. They also posted fliers to remind providers about the program's importance, provided tools to support service delivery, and when possible, adjusted and clarified their service delivery workflows. For example:

- Coaches at Catholic Health Initiatives found that competing priorities external to the intervention interfered with their ability to provide care management; these priorities include learning a new EMR system and taking on additional tasks to cover for staffing shortages. Clinicians in small, rural clinics felt overextended before the program was implemented, and they found themselves in the position of having to make trade-offs between their daily responsibilities (such as treating patients) and their program responsibilities (such as attending meetings for physician champions).
- Many PCPs participating in Montefiore Medical Center's program said that although they strongly support the program, their limited time and competing priorities have made it difficult to engage with the behavioral health team. To mitigate this challenge, program leaders work with behavioral health staff at each site to adapt the program model to better meet physicians' preferences and schedules.

Eight awardees reported that an inadequate understanding and awareness of program services, care processes, and new staff roles hindered the staff's engagement in, and their ability to implement, service delivery models. To address this challenge, the awardees devised targeted training, education, and communication strategies, and they developed clearer care protocols and job descriptions. For instance:

- Leaders at the Mesa Fire and Medical Department noted that, because the staff at non-implementing emergency medical service stations were not fully aware of the program, they were less likely to request community care units after arriving on the scene and finding a

patient with a non-emergent condition. In response, the awardee leaders began engaging staff at these stations—via presentations, face-to-face discussions, and e-communications—to help raise awareness and increase the use of the community care units.

The ingrained habits and care philosophies of providers, reported by seven awardees, formed another common barrier to staff engagement in program activities. The awardees have attempted to address this challenge through education and communication techniques. For instance:

- Several program leaders and staff at Columbia University said that the main, overarching challenge to provider engagement is that the program represents a paradigm shift in how dentists think about early childhood caries because it forces them to focus less on repairing teeth and more on managing disease. One program leader said that the program is attempting to shift the entire culture and practice of pediatric dentistry, and that change on this scale takes time. To encourage change in these ingrained beliefs among dentists and community health workers, the program team stressed the discomfort that children must endure during dental repair (including nasal intubation, general anesthesia, and an IV drip) and has advanced the idea of managing disease as a way to prevent these experiences.

Additional barriers to staff engagement, reported by four to six awardees each, include heavy workloads, implementation delays, staff turnover and inadequate training, and burdensome data recording and reporting requirements. For example:

- Case Medical Center originally limited the nurse care coordinators' caseloads to 225 patient each, but the awardee's staff reported that service delivery faltered when the nurses served more than 160 individuals with complex cancer. Program leaders call this phenomenon "saturation," and they have since reduced the nurse care coordinators' caseloads and are considering other options for making their workloads more manageable. Other options include balancing their caseloads according to the acuity of their patients' conditions and adding another nurse care coordinator position to maintain the original target number of patients.
- At Yale University, some paramedics expressed frustration with the delay (due to low enrollment) between their training sessions and the opportunity to use their new skills during home visits. In response, the awardee offered "refresher" training and recently introduced quarterly meetings for paramedics in order to increase their engagement in the program and to give them an opportunity to talk with each other in person.
- For CareChoice, the nursing home facilities that lost a transition coordinator in the first year of the program found it challenging to maintain the program team's buy-in and engagement without the transition coordinator's continuous support, training, and monitoring. The awardee staff worked closely with administrators and other staff at these facilities to develop interim plans to ensure that the more comprehensive transition planning for participants through the use of a web-based support tool continues. Even in facilities that have had the same transition coordinator since the program began, continuous efforts are necessary to

ensure that new team members are adequately trained on the program and on their role in the process.

- Hospital-based site leads at New York City Health and Hospitals indicated that the program documentation procedures are burdensome because care management staff must enter data about participants into both the EMR (for clinical information) and an awardee-developed care management database (for tracking enrollment and interventions). The fact that the data sometimes come from paper forms contributes to the burden. However, during Year 2 of the program and based mainly on factors external to the program, the awardee will begin to implement a new EMR and care management software, which is expected to reduce staff burden, promote standardization, improve access to clinical data, and facilitate program monitoring—all of which are expected to boost staff engagement.

b. Participant engagement

Awardees were successful in engaging program participants when they met participants' needs, accommodated their preferences, and built a rapport with them.

Engaged participants are more likely than other participants to receive program services and benefits as intended. Seventeen awardees explained how they strengthened participant engagement and how this, in turn, supported the implementation of their service delivery models. For example:

- Mount Sinai noted that providing patients with care in their homes helped to meet their needs and respond to their preferences, thus improving their engagement in services. Awardee staff said that participants seem more engaged in home care because it is easier to include other family members in discussions about a participant's care goals when visits take place in the home.
- At CareChoice, the transition coordinator and team members reported that participants like having all the information about their care plan and medications in one place, including input from the physical therapy team and other staff outside of the nursing unit, and that the consolidated information reinforced participants' engagement in comprehensive discharge planning.

The awardees faced some common process-related challenges to engaging participants in program services. It was sometimes difficult for staff to persuade participants of the program's value and to communicate openly about sensitive topics. Eleven awardees struggled with these and other process-related challenges to engaging participants despite their best efforts to encourage participant engagement.

The most common barrier to keeping participants engaged (cited by six awardees) was difficulty persuading participants of the program's value. For example:

- Mount Sinai reported that some participants do not understand why they must be visited so often by health care providers, and that others are uncomfortable with multiple providers entering their homes so frequently. To overcome these barriers, program staff began to

provide potential participants with tentative schedules so that they and their families would understand the intensity and the benefit of the acute care program before enrolling. In addition, the program's social worker continued to meet prospective participants in the hospital so that they and their families would understand that she and other team members would be regularly visiting them in their homes.

- Staff at VillageCare reported that some people showed an interest in enrolling in the program simply to qualify for the cell phone payment. Program liaisons and health coaches have emphasized the value of the program and encouraged participants to become actively engaged. The staff reported that they have had some success with this approach, but VillageCare will not know how many participants are truly interested in the program for its own sake until the cell phone payment expires after 12 months of participation, at which point the awardee will be able to assess how many participants remain engaged in the program and how many do not.

Four awardees found that to effectively engage participants and implement services, they had to help participants overcome the social stigma related to sensitive health topics such as mental health or alcohol and drug abuse. For instance:

- Staff at the Children's Home Society said that although many students need behavioral health services, stigma prevents many of them from participating in the intervention. Patient navigators and counselors are attempting to combat this stigma through education. Through continued outreach by the staff, both formally and informally, the awardee reported that students are seeking counseling with greater frequency than before.
- Montefiore Medical Center's staff said it was challenging to engage some participants because of the stigma surrounding mental health treatment. The awardee has attempted to overcome this barrier by promoting behavioral health care as a part of the participants' overall health and well-being. Along these lines, Montefiore Medical Center has tried to normalize behavioral health by introducing the program to participants via their primary care physician.

c. Stakeholder engagement

Investing in and leveraging relationships with external stakeholders has supported the implementation of service delivery models. Awardees have engaged a variety of stakeholders for two main reasons: (1) to increase the community members' awareness of program services and thus the likelihood that they will refer eligible individuals to the programs and (2) to ensure that a broad range of community services provided by stakeholders is available to program participants. Nineteen awardees reported that they have effectively involved individuals who are not direct staff but who are important to implementation success. For all awardees, stakeholder engagement was most commonly facilitated by investing in new relationships and leveraging their own reputations and prior relationships with partners. For example:

- According to the Wisconsin Department of Health Services, its long-term collaboration with its current partners on previous initiatives has substantially facilitated the implementation of its service delivery model.
- Leaders at the Mesa Fire and Medical Department said that the fire department's established role and reputation as an effective emergency responder in the community facilitated partnerships with, and buy-in from, local stakeholders.

Differences in the partners' philosophies of care were a common barrier to stakeholder engagement. Partners' competing priorities also limited their engagement. Ten awardees reported implementation challenges related to weak stakeholder engagement, and they have used a variety of strategies to respond to these challenges.

Five awardees cited differences in care philosophy as an impediment to stakeholder engagement. For example:

- Ventura County reported that some stakeholders initially resisted implementing the program because they disagreed with the originally proposed staffing model, in which RNs rather than respiratory therapists were to conduct pulmonary function tests. To overcome this barrier, the awardee added respiratory therapists to its staffing plan.
- The Children's Home Society also experienced barriers to stakeholder engagement. The awardee said that community partners sometimes had conflicting visions of what services should look like because the intervention integrates a medical model focused on the whole community into an education model focused on students only. To overcome these philosophical differences, the awardee hired a person to liaise between clinical and education staff, who was reported to be a key facilitator in boosting stakeholder engagement.

Stakeholders that are not directly involved in the service delivery model have little incentive to participate, or have priorities that might not fully align with those of the awardees. Four awardees said that competing priorities were a barrier to stakeholder engagement. For example:

- The University of California at San Francisco experienced inconsistent engagement from providers not affiliated with its medical centers. In response, the awardee restructured its communication with these stakeholders to emphasize the intervention's goal while being clear on its intent to limit the burden on its partners.
- The Clifford Beers Guidance Clinic was unable to co-locate program care coordinators at the facilities of its physical health providers (such as school-based health centers), and it received limited feedback from physical health providers on the development of integrated behavioral and physical health care plans for participants. The awardee cited the competing demands and limited resources of its physical health partners as contributing to this challenge and is working on addressing this challenge in several ways. For example, the awardee hired an on-site pediatrician to improve the program's ability to address physical health needs. The awardee also encouraged stakeholder engagement by providing a stipend to a pediatrician at one location and funding for an on-site nurse at another to help with

referrals and facilitate communication between physical health providers and care coordinators.

3. Characteristics of the inner setting that influenced the implementation of service delivery models

During their first year of implementation, the awardees encountered four common characteristics related to their inner setting that influenced their ability to effectively implement their service delivery models: team characteristics, prior experience, organization leadership, and health IT. Awardee administrators took several steps to maximize the facilitators of and minimize the barriers to effective implementation. Table III.6 summarizes these characteristics, provides examples of how each facilitated or impeded implementation, and lists the awardees that cited them as influences.

a. Team characteristics

The ability of program teams to work together, as evidenced by strong communication and collaboration, was the inner setting characteristic mentioned most often as a facilitator of implementation effectiveness (cited by 27 awardees). Good teamwork supports effective implementation by bringing collective expertise to bear on the delivery of program services and on the development of solutions to unanticipated challenges. The awardees pointed to two team characteristics in particular that facilitated program implementation.

First, 17 awardees believe that an integrated, resourceful, collaborative team in which staff at all levels are committed to their joint success was a key influence on effective implementation in the first program year. For example:

- In their weekly two-hour meetings, the care coordinators at Johns Hopkins University who provide home-based dementia care rely on the expertise of the entire team to form strategies for caring for participants and addressing their unmet needs.
- Staff at Boston Medical Center described how collaboration helped the team to be mindful of one another's expertise. This approach increased the contributions made by individual team members and the resources they access on behalf of participants and their families.

Second, 15 awardees noted that strong communication and shared learning, often promoted through regular meetings, was essential to implementation effectiveness. For example:

- The University of California at San Francisco cited the high level of communication between care team members both within and between the implementing sites as key to achieving project goals. The awardee holds weekly debriefing meetings with the teams in which concerns and challenges can be identified and addressed. Input from all team members is seen as essential and has resulted in program modifications when necessary.

Table III.6. Inner setting characteristics that influenced the implementation of service delivery models

Inner setting characteristics	Description	Examples of facilitators	Examples of barriers	Number of awardees
Team characteristics	Communication and collaboration among team members	<ul style="list-style-type: none"> Integrated, resourceful, collaborative teams Strong communication and shared learning 	<ul style="list-style-type: none"> Unclear policies, roles, and protocols 	<p>Facilitator: 27 AAMC, Altarum, Amerigroup, BMC, CCC, CCNC, CHIIC, CHS, Clifford Beers, Columbia, DMC, FPHNY, Hopkins, Icahn, Montefiore, NACHRI, North Shore, NYCH+H, SCH, UHCMC, U KS, UCSF, U NC, Wash U, WI DHS, Ventura, Yale</p> <hr/> <p>Barrier: 4 Columbia, NM, NYCH+H, UIC</p>
Prior experience	The extent to which the intervention builds on the implementation of a similar program or pilot, or on concurrent programs with compatible objectives	<ul style="list-style-type: none"> Leveraging expertise and tools from prior experiences with similar projects 		<p>Facilitator: 26 AAMC, ACCF, Altarum, Avera, CCC, CCNC, CHIIC, CHS, Columbia, FPHNY, Four Seasons, GWU, Hopkins, Icahn, Mesa, Montefiore, NACHRI, North Shore, SCH, UHCMC, UMich, UNM, NYCH+H, Wash U, WI DHS, Yale</p> <hr/> <p>Barrier: 2 Clifford Beers, UMich</p>
Organization leadership	The extent to which an organization's leaders who were not directing the program affected implementation through support and leadership style	<ul style="list-style-type: none"> Publicly invested leaders who motivate staff and provide resources 	<ul style="list-style-type: none"> Variation in leadership engagement across implementing sites 	<p>Facilitator: 21 AAMC, ACCF, Amerigroup, CCNC, CHIIC, CHS, Columbia, DMC, Four Seasons, FPHNY, Montefiore, NACHRI, NHCHC, NM, North Shore, SCH, UHCMC, UIC, VillageCare, Wash U, WI DHS</p> <hr/> <p>Barrier: 5 ACCF, AAMC, Avera, CCC, U NC</p>
Health IT	The extent to which internal technological infrastructure or capacity and external technological trends influenced program implementation	<ul style="list-style-type: none"> Using health IT that supports service delivery and streamlines work Using health IT to improve communication and data sharing among providers 	<ul style="list-style-type: none"> Difficulty integrating health IT into providers' EMRs Implementing sites use EMRs with different functionalities Difficulties with internet connectivity and bandwidth Labor-, time-, and cost-intensive modifications and upgrades 	<p>Facilitator: 14 AAMC, Avera, BMC, CCC, CHIIC, Clifford Beers, FPHNY, Hopkins, Montefiore, NM, SCH, UIC, UMich, Ventura</p> <hr/> <p>Barrier: 25 ACCF, Altarum, Avera, BMC, CCC, CCNC, CHIIC, Columbia, Four Seasons, GWU, Icahn, Mesa, Montefiore, NACHRI, North Shore, NYCH+H, SCH, U KS, UMich, UIC, U NC, Village Care, Wash U, WI DHS, Yale</p>

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of program narratives through the fourth program quarter, August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features. This table includes only examples of facilitators and barriers reported by four or more awardees.

- The Association of American Medical Colleges supports strong communication and shared learning within and between teams by hosting a learning collaborative that includes a program website and a regular newsletter for highlighting and sharing best practices and implementation approaches.

Unclear program policies, staff roles, and care protocols diminished the ability of teams to work together cohesively and deliver high quality services. Four awardees cited this factor as a barrier to implementation. For example:

- Leaders at New York City Health and Hospitals reported that an initial lack of standardization in the care protocols led to some variation in program implementation by site, and some team members were unsure of the specifics of their roles. Program leaders therefore developed multiple strategies to standardize the protocols, including creating scripts for some staff and developing program-wide work groups.
- Similarly, at the University of Illinois, staff struggled to define and understand their roles, and they found it difficult to prioritize their workloads. Both issues diluted the effectiveness of the care coordination teams. For example, care coordinators did not have consistent guidance on how to balance the need to conduct initial assessments with newly enrolled participants with the need to follow up with existing participants whose assessments were completed. The awardee recently hired a director of care coordination to more clearly define and standardize roles and care processes within and across the five care coordination teams.

b. Prior experience

Awardees promoted implementation success by building on prior projects and leveraging the experience and tools of their partner practices and organizations. Twenty-six awardees said that their experience with similar interventions and the tools they developed for those projects made it easier to implement their HCIA R2 interventions. For instance:

- Some of the care coordinators and peer navigators at the Fund for Public Health in New York described their responsibilities as being similar to those associated with their roles on a previous project. This experience facilitated implementation because the staff required little new information or training, and could start working as soon as service delivery began.
- North Shore's early implementation experience was facilitated by its ability to use resources developed under a previous pilot project. The resources include educational materials, checklists, and a tracking database that features measurement tools, alert reports, scorecards, and dashboards.
- At the University of Michigan, the experience of participating hospitals and practices with similar programs designed to support early recovery after surgery has both supported and impeded implementation. According to the awardee, the advantage of working with hospitals and surgeons who have implemented similar programs is that they understand the value of changing the processes of surgical care to improve quality and outcomes. The challenge, however, is that because these hospitals and surgeons have already redesigned

many of their own processes and tools, they are not always receptive to the awardee's processes and tools. For example, one hospital already had a pre-operative kit for patients that is similar to the awardee's kit. Although the staff at this hospital were eager to use the awardee's automated call/text technology and web-based patient tracker, they declined to use many other components of the kit and continued to use their own tools.

c. Organization leadership

Strong support from organization leaders who are publically invested in the programs promoted effective implementation by motivating staff and securing necessary resources.

Twenty-one awardees cited support and a commitment from their organizations' leaders (as distinct from provider champions at the implementing sites) as critical to their early implementation success. For instance:

- The Detroit Medical Center reported that strong executive leadership across the four participating hospitals has been critical to implementation success. Many of these leaders serve on the awardee's advisory board, and they have provided ongoing support and internal resources, such as clinic space, to facilitate program implementation. In addition, hospital ED chiefs championed the program by emphasizing the importance of primary care in preventing excessive use of the ED, which paved the way for program acceptance and participation among ED physicians.
- Similarly, engaged, passionate, accessible leaders at the Case Medical Center motivated the clinical staff to engage with the program. This dedication and support from leaders has facilitated the implementation of the program.

Variation in leadership support across the participating sites has resulted in uneven implementation. Five awardees experienced this leadership-related barrier to effective implementation. For example:

- Senior leaders at two of the sites we visited at the American College of Cardiology are publically invested in the program, which motivated the staff to get involved and ensured that the resources needed to support implementation were made available. The same level of motivation and support was not forthcoming from leaders at the third site we visited, so implementation at this site was not as effective. Program staff at this site, which is part of an accountable care organization, said that senior leaders were more focused on reducing costs in other parts of the organization than on supporting the implementation of the service delivery model and the use of EMR-based decision-support tools.
- The Association of American Medical Colleges also experienced variation in leadership across the three sites we visited, mostly because of turnover at the senior leadership level at one site. Program staff at this site said that turnover made it difficult to obtain institutional support and that a lack of senior-level commitment continues to be a problem. To address this challenge, the awardee worked closely with this site to support program staff and to leverage knowledge from other sites while continuing to build a commitment from senior leadership.

d. Health IT

Health IT has supported the implementation of service delivery models by streamlining the staff's work and improving communication and data sharing among providers and across data systems. Fourteen awardees explained how health IT has supported the implementation of their service delivery models in these ways. For example:

- Johns Hopkins University cited its health IT care management system as a key component of implementation success. The data system contains a repository of informational and service-related resources that care coordinators can access and contribute to. This feature supports resource sharing among care coordinators as well as the linkage of participants to appropriate services. The data system also stores participant-specific information that enables care coordinators to track participants' needs, progress, and outcomes.
- Seattle Children's Hospital linked participating providers' EMRs with Washington State's health information exchange. Program staff can set up alerts so that they automatically receive a message in their EMR when any participant's health information is updated. This use of health IT helps the care team track participants' appointments and care across EDs, hospitals, and specialty providers in the exchange.

Many awardees experienced difficulties with health IT integration and functionality, making it necessary for them to develop workarounds or modifications and upgrades to existing technology. Across factors, the use and implementation of health IT was cited most often as a challenge to implementing service delivery models (reported by 25 awardees). Two types of challenges were the most common.

First, 13 awardees said they had difficulty integrating health IT into participating providers' EMRs. This slowed implementation because awardees had to work around the problem by, for example, developing and using paper data collection tools, entering data into multiple systems, and extracting data manually. For instance:

- CareChoice reported that its web-based decision-support and education tool has some interoperability issues with other data systems and does not link with any of the facilities' EMR systems. Staff have therefore had to re-enter participation information and medication lists into numerous tools, a burdensome task reported by many staff. Some facilities attempted to address this challenge by allocating the re-entry tasks across departments, including medical records staff. Although the awardee originally attempted to develop an interface with its facilities' EMR systems, there were too many systems with different requirements for this to be feasible given the program budget. Although the need to re-enter data is challenging, program staff were otherwise positive about the web-based decision support and education tool and its functions.
- Boston Medical Center also reported that a lack of integration between tools forced staff to enter data and make changes in both the awardee's health IT tool (an electronic care plan) and in its existing EMR, a time-consuming process.

Second, 10 awardees reported that variation in EMR functionality across sites and providers impeded implementation in that different sites/providers were more or less able to use their EMRs to support service delivery or monitor progress. In response, awardees developed workarounds or invested in other IT modifications or upgrades. For example:

- New York City Health and Hospitals noted that because of variation in EMR functionality and use across providers, the data that are captured might not be viewable by all staff involved in a participant's care, limiting their ability to effectively deliver services and co-manage care. As mentioned, the awardee anticipates that the new EMR to be implemented in Year 2 will increase access to clinical data and address this challenge.
- Program leaders at the hospitals that are partnering with the Wisconsin Department of Health Services continue to struggle with adapting their EMRs such that they facilitate decision support and data collection. Some program staff said that not being able to systematically collect non-clinical, program-specific data in the EMR, such as phone calls to families, interfered with their ability to collect data in an automated fashion. In addition, modifying the EMR system to systematically collect data elements specific to the project has also been challenging because the system is intended to serve clinical purposes. In the meantime, the program staff do their own data collection and management outside of the EMR system.
- At the University of Kansas, the providers' EMRs do not support care management activities or allow the documentation that is needed to monitor program performance. To overcome these challenges, the awardee created Excel spreadsheets and templates in order to collect data that supports the delivery and monitoring of care management services. The awardee is also creating a platform that will feed claims data and manually extracted EMR data into these spreadsheets.

A number of awardees reported modifying and upgrading their health IT tools and systems. Five awardees reported that the labor, time, and cost implications of these modifications and upgrades slowed implementation.

4. Environmental factors that influenced the implementation of service delivery models

The two most common environmental factors that influenced the awardees' ability to effectively implement their service delivery models are the needs and resources of the target population and the health care system in which the intervention operates. Table III.7 describes these factors, provides examples of how each factor either facilitated or impeded implementation, and lists the awardees that cited them as influences. Although the awardees' ability to influence these factors in the short run is limited, they have made every effort to work within the system to respond to their participants' needs, as described below.

a. Participants' needs and resources

Implementation effectiveness was impeded by the unexpected complexity of the medical, social, cultural, and economic needs of many of the target populations. Awardees

and their staff remained responsive to these unanticipated needs by being flexible, redefining their roles, and linking participants to community resources. In general, the awardees created their programs to help people with complex or significant health care and social service needs. Nonetheless, 24 awardees encountered challenges in delivering care to participants with unanticipated needs. These needs are related to financial insecurity, lack of transportation, unstable housing, education issues, food insecurity, technological barriers, and safety concerns. The challenges include participants' reliance on staff to solve their other medical, social, and economic problems; difficulty conducting follow-up activities and keeping participants engaged; and burnout as the staff work relentlessly to serve participants. For example:

- Seattle Children's Hospital reported that the main challenge to implementing care coordination and case management has been the diverse and unanticipated complexity of participants' needs. The awardee recognizes that participants' needs are not always medical and that they can be related to language, transportation, or other social determinants of health. But because every family is different, the care team must assemble resources that are unique to each participant and caregiver, including referrals, interpreters, and community supports. To address this challenge, Seattle Children's Hospital hired care team members who are not only experienced with care coordination, but who also demonstrate the ability to be flexible in approaching their role. In addition, the care team updated the patient assessment tool to better capture the needs of a child and his or her family; the team is also creating a resource manual to link families with organizations and community supports that reflect their needs and geographic locations.
- Columbia University and Altarum, two awardees that are delivering oral health interventions, described how the unanticipated complexity of participants' other medical and social issues often means that oral health does not take priority. Staff found that they had to help families address other pressing needs before they could focus on oral health concerns.

b. Health care system

Factors in the external health care system, which are outside of the awardees' control, can positively or negatively affect the implementation of a service delivery model.

Influential factors include government policies and other regulations, recommendations for evidence-based care guidelines, and shifts in health care payment systems and incentives.

For four awardees, factors in the health care system, such as favorable service delivery guidelines or payment policies, have supported the implementation of their service delivery models. For instance:

- Avera reported that readmission penalties and other value-based payment policies for hospitals facilitated the adoption of its model. Because hospitals face penalties and payment reductions under Medicare's Hospital Readmissions Reduction Program if readmission rates are above the standard, hospitals have encouraged the long-term facilities to which they refer discharged patients to participate in the awardee's program and to help them reduce their readmission rates.

Table III.7. Environmental factors that influenced the implementation of service delivery models

Environmental factors	Description	Examples of facilitators	Examples of barriers	Number of awardees
Participants' needs and resources	The extent to which the needs and preferences of the target population affect implementation		Unanticipated medical, social, cultural, and economic factors in participants' lives	<div>Facilitator: 0</div> <hr/> <div>Barrier: 24 ACCF, Altarum, Amerigroup, BMC, CHIIC, CHS, Clifford Beers, Columbia, DMC, FPHNY, GWU, Montefiore, NACHRI, NHCHC, NM, NYCH+H, SCH, UMich, UHCCMC, UIC, UCSD, VillageCare, Wash U, WI DHS</div>
Health care system	The extent to which the external health care system and payment models from private and public payers affect implementation	Favorable service delivery or payment policies	Unfavorable reimbursement and payment policies	<div>Facilitator: 4 Altarum, Avera, NACHRI, NM</div> <hr/> <div>Barrier: 11 Altarum, CHS, DMC, FPHNY, NACHRI, NM, North Shore, UIC, U KS, Wash U, WI DHS,</div>

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of program narratives through the fourth program quarter, August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features. This table includes only those examples of facilitators and barriers reported by four or more awardees.

Twelve awardees reported factors unique to their external environment as impeding implementation, including the state health care system and other unfavorable reimbursement and payment policies. Examples of how this diverse set of external factors affects implementation include the following:

- Washington University’s ability to expand service delivery to women newly covered for contraceptive services under the Affordable Care Act was negatively influenced by Missouri’s choice not to expand Medicaid eligibility. In addition, one Medicaid MCO and many commercial plans excluded the university medical center from their provider networks because they considered the provider to be too expensive. Because of these external factors, the awardee has had to look for alternative ways to limit or cover participants’ out-of-pocket costs for services. Partial solutions come from the state’s Medicaid family planning waiver and Title X program, which help defray the costs of contraceptive services for uninsured women and those who do not meet Medicaid’s income eligibility threshold.
- For North Shore, the FFS payment incentives run counter to effective nephrology practice promoted by the project. According to one of staff member at North Shore, the financial incentives are “backwards”—meaning that nephrologists make less money if a patient gets transplanted even though that is the best treatment. Despite the prevailing financial incentives, most clinicians have been receptive to participating in the awardee’s program.

Three awardees cited both positive and negative influences on implementation from the external health care system. For instance:

- Altarum reported that recent changes to the American Academy of Pediatrics periodicity schedule, which added the application of fluoride varnish at regular intervals from 6 months and 6 years of age, facilitated service delivery as it validated the importance of early and regular dental care. The awardee also noted, however, that Michigan Medicaid’s policy to allow certified physicians and nurse practitioners to bill for the application of fluoride varnish and oral health risk screening is both a facilitator of and a barrier to implementation. Although the possibility of reimbursement might encourage the application of fluoride varnish and oral health risk screening, the low Medicaid reimbursement rate for these services and the fact that many providers have reported denials of claims for reimbursement from Medicaid MCOs might limit provider participation. As a short-term workaround, Altarum developed training to encourage providers to submit claims for reimbursement through the Michigan Medicaid FFS system rather than through MCOs.

C. Self-monitoring of implementation performance and making program improvements

As discussed in the previous section, awardees made a variety of program and implementation changes as they encountered implementation challenges and identified opportunities to better serve participants and achieve program goals. In order to inform their program change decisions, awardees considered information from a variety of sources (Table III.8). This section summarizes how the insights gleaned from frontline staff, self-

monitoring data, external stakeholders, and program participants provided valuable input into the processes for making program improvements.

Frontline staff provided ongoing feedback to awardee program leaders to inform continual improvement in program implementation and design modifications. Although program decision making was largely centralized, program leaders from 37 awardees solicited feedback from implementation site staff, either formally through regular (weekly, monthly, or quarterly) meetings and site visits or informally through ad hoc, on-site, or telephone conversations. Staff meetings gave program leaders the opportunity to talk with frontline staff about implementation progress and problems and, in some cases, witness firsthand the implementation issues, such as the integration of interventions into clinical workflows.

- The University of Kansas's program management team met one-on-one with participating providers to listen to their concerns and solicit input in developing acute care protocols. This interaction with frontline staff facilitated provider participation, adoption of standard protocols, and implementation of the program model.

Table III.8. Sources for monitoring performance and making decisions about program change

Source	Awardee decision-making activities	Number of awardees
Frontline staff	<ul style="list-style-type: none"> • Regular meetings with program leaders to discuss implementation progress, solutions to problems, and suggested improvements • Site visits to understand implementation concerns and improve integration of interventions into clinical workflows 	37
Self-monitoring data collection and reporting	<ul style="list-style-type: none"> • Analysis of program metrics to monitor progress and identify areas for improvement • Data sharing with staff to support collaborative problem solving 	30
External stakeholders	<ul style="list-style-type: none"> • Steering committees that include representatives of providers, payers, and community organizations to advise program implementation • Partnerships with community organizations and community advisory boards to identify implementation challenges and guide program improvements • Commercial payer engagement to help monitor implementation progress 	16
Program participants	<ul style="list-style-type: none"> • Patient satisfaction surveys to assess the effectiveness of service delivery • Informal participant feedback collected through interactions with frontline staff to identify participant concerns and suggest improvements 	14

Sources: Discussions with awardee and program staff during site visits from September to December 2015, and a review of fourth quarter program narratives through August 31, 2015.

Note: Counts are probable underestimates because they are based on information volunteered in discussions with awardee and program staff and reported in individual awardee program narratives, rather than yes-no responses to questions about specific actions or features.

These meetings also allowed frontline staff to suggest program improvements and receive guidance and support from program leaders to overcome challenges encountered in delivering program services and meeting program goals. Several awardees reported plans to solicit frontline staff feedback more systematically through surveys and interviews and to analyze these data to inform ongoing improvement. Staff feedback led to various program-related changes, including

revised recruitment strategies to increase enrollment, enhanced program training, and modified staffing and position responsibilities.

- VillageCare program leaders identified low usage of virtual support groups and peer mentoring features of its mobile platform for HIV management by program participants as a problem. Working closely with program staff, program leaders identified technical barriers and possible participant concerns about lack of confidentiality related to the use of these services. In response, the awardee decided to drop these features from the platform and instead add a more cost-effective live chat feature, which participants could use anonymously.

Awardees used self-monitoring data to guide decisions about process improvements for effective implementation and program changes in order to better meet participants' needs.

During the first year of program implementation, awardees collected a range of data—including, service delivery, utilization, and quality metrics—to monitor implementation progress.⁶

Although a few awardees have not yet accumulated enough data to analyze trends, 30 awardees reported using program metrics to assess the extent to which the programs were operating as designed and to identify areas for improvement.

Several awardees shared data with program staff through dashboards, reports, and team meetings to support group problem solving. Data-driven quality improvements have included (1) targeting staff education, training, and outreach to ensure compliance with intervention design; (2) standardizing care pathways; (3) identifying participant recruitment and enrollment challenges and monitoring effectiveness of strategies to overcome them; and (4) adjusting staffing, resource allocation, and program operations such as caseloads, hours of operation, and follow-up intervals to efficiently meet participant needs.

- The Association of American Medical Colleges developed a dashboard containing program service delivery data, which allowed staff at each implementation site to compare performance with other sites and to identify areas for quality improvement.
- After examining enrollment data, the University of North Carolina discovered a larger-than-anticipated percentage of Medicaid participants enrolled in the program, which prompted program leaders to expand exercise physiology classes to practices in a wider variety of locations in order to improve access for more people, including low-income rural populations that may face transportation challenges.

External stakeholders—including advisory boards, community organizations, other providers, and payers—have influenced awardee program implementation in varied ways.

Sixteen awardees reported that input from external stakeholders has affected the implementation of their programs. Steering committees—including representatives from provider organizations, commercial payers, community organizations, and program partners—serve an advisory role to

⁶ The analysis of awardees' use of self-monitoring data for program improvement was based on interviews with awardees during our site visits. It does not include an assessment of awardees' self-monitoring metrics reports.

awardees. They review implementation progress, provide operational guidance, help increase program awareness, and offer strategies to improve outcomes. Community advisory boards and feedback from community organizations have helped some awardees identify implementation challenges, such as local needs affecting specific target populations, and have guided program improvements. Several awardees engaged commercial payers to help monitor the progress of program implementation and to build support for the payment model, while some awardees developed relationships with other providers that have guided program changes.

- Amerigroup expanded its program eligibility criteria to include more youths after receiving feedback from stakeholders about whom would benefit most from participating in the program. The stakeholders include staff from a group home, an independent living program, and at the Georgia Department of Family and Child Services.

Although most programs are in the early stages of implementation, some awardees have already used feedback from participants to assess implementation effectiveness and make program modifications to better meet the needs of target populations. Fourteen awardees reported efforts to assess participant perspectives to guide ongoing program improvements; many others reported plans to collect and analyze participant feedback in the second year of program implementation. Some awardees used participant satisfaction surveys to evaluate the effectiveness of frontline staff in delivering services—such as tele-health consultations, health coaching, and assessments—and to identify training needs for frontline staff. Several awardees reported using informal participant feedback provided to frontline staff to make service delivery improvements.

- Case Medical Center revised its assessment tools to address participant complaints that the assessments were too long, redundant, and awkwardly worded. The awardee also reduced the frequency of follow-up calls for stable patients who expressed dissatisfaction with the intrusion of monthly calls.
- The Children’s Home Society adjusted appointment times to increase access to program services, based on participant feedback to frontline staff.

In addition, CMMI and the implementation and monitoring contractor have provided feedback that has prompted awardees to make operational improvements, particularly in enhancing their recruitment and enrollment strategies. Sixteen awardees described ways in which feedback and technical assistance from CMMI and the implementation and monitoring contractor had affected their programs. After consultation with CMMI and its implementing and monitoring contractor, several awardees revised their recruitment and enrollment strategies to increase participation. Changes included (1) making outreach materials more user-friendly, (2) updating enrollment processes to confirm program eligibility, (3) expanding eligibility criteria, and (4) revising performance measures after meeting initial targets.

Feedback from CMMI also prompted some awardees to revise their program design, including expansion to other providers and development of additional program components. However, a few awardees reported challenges related to CMMI requirements and feedback. For

one awardee, denial of a request to expand enrollment beyond the original target population meant that younger youth could not be enrolled in the program. Another awardee reported that implementation was initially delayed by several months while it worked with CMMI and the implementation and monitoring contractor to revise the operational plan. Frontline staff remained idle during several iterations of the plan before it was approved by CMS. Nevertheless, awardee staff reported that they have a positive relationship with both CMMI and the contractor.

D. Progress to date implementing payment reform models

Long-term sustainability of the awardees' program innovations will require that ongoing operational costs be supported through adequate and appropriate payment systems. This section builds on the descriptions of the payment reform models designs (see Chapter II) and addresses (1) what progress has been made toward operationalizing payment reform models and (2) what facilitators and challenges awardees have experienced and how they addressed those challenges. The findings below are based on qualitative synthesis of the individual awardee program narratives provided as Appendix B of this report.

1. Progress in developing payment reform models

Although most awardees have a general concept of the payment model they hope to use, many are still developing their payment models and have yet to see them implemented. By the end of their three-year cooperative agreements, awardees are required to have designed a payment model, although they do not have to implement it during this time. Nevertheless, sustainability would likely depend on whether the model has been implemented. Many awardees plan to finalize their payment model in the last year of the award, when they should have enough data on service costs to calibrate their rates. In addition, some awardees wanted to wait to approach payers with their proposed payment plan until they could demonstrate that their program improves care and lowers costs.

Some progress is evident for two-thirds of the programs. Although 11 of the 39 awardees remain in the “thinking stage” of implementing their payment models, more than 70 percent of them (28 awardees) have been able to move ahead (Table III.9). Programs that focus only on Medicaid and other low-income populations were more likely to be making progress than others (100 percent versus 61 percent), as were those focused on youth rather than older populations (100 percent versus 65 percent).⁷ A total of 24 awardees have begun working with potential payers to obtain data from them or to discuss potential payment model designs; others have begun data analysis tasks related to payment model formation, often by working with consultants. These tasks include (1) developing a baseline understanding of costs and utilization, (2) establishing routines for tracking cost and utilization of program participants, and (3) beginning to use historical data to simulate various payment model options. Ten awardees needed to develop a billing infrastructure or some way to measure program costs first, and they have taken that step. To date, only one awardee (the University of Michigan) has implemented a

⁷ These characteristics overlap, though not completely—that is, many of the same awardees have both characteristics.

payment model that might continue after the end of the HCIA R2 funding. In this case, a major payer agreed to pay an incentive to surgical teams meeting conditions for achieving patient recruitment goals in an initiative that aims to reduce surgical complications and shorten recovery time.

Table III.9. Steps taken toward implementing payment models

Steps	Awardee	Number of awardees
No significant steps taken to date	Avera, CHIIC, Four Seasons, NHCHC, North Shore, UCSD, UCSF, U NC, UNM, Ventura, Yale	11
Some steps taken		28
Began working with one or more payers	ACCF, Altarum, BMC, CCC, CCNC, CHS, Clifford Beers, Columbia, FPHNY, GWU, Hopkins, Icahn, Mesa, Montefiore, NACHRI, NM, NYCH+H, SCH, UHCCMC, UIC, U KS, UMich, Ventura, Wash U	24
Began analyzing data	AAMC, ACCF, Amerigroup, Avera, CCNC, DMC, FPHNY, Hopkins, NACHRI, NM, SCH, VillageCare	12
Developed billing infrastructure or plans for measuring costs	ACCF, BMC, CCNC, Clifford Beers, Columbia, Hopkins, Icahn, Mesa, VillageCare, WI DHS	10
Payment model implemented	UMich	1

Sources: Discussions with awardee and program staff during site visits from September to December 2015, and review of awardees' self-reported fourth quarter program narratives through August 31, 2015.

Note: Awardees can be counted in more than one group. Counts are probable underestimates because they are based on information volunteered in discussions with awardee and program staff and reported in individual awardee program narratives, rather than yes-no responses to questions about specific actions or features.

Several awardees that are dependent upon Medicaid revenue found that they needed to make changes to their proposed payment models. These awardees have shifted from the payment models proposed in their applications to ones that better align with or leverage changes in Medicaid policy. The following are examples:

- The University of Illinois originally proposed a capitated payment model to fund coordinated health care services for children with medical complexity. To better align with the state Medicaid agency's approach to care coordination, the awardee shifted its focus to developing a suite of products that could be marketed to Medicaid managed care organizations.
- Columbia University switched to a FFS payment model for community health workers after CMS changed its Medicaid payment policy to allow for direct payment to community health workers via a delegation model. However, the awardee must wait to see if the state of New York uses the new flexibility to allow this.

Thinking ahead to maximize the appeal of its final payment model to payers, one awardee was specifically working to reduce the cost of its innovation. VillageCare was actively refining its innovation with specific thought to ensuring the most cost-effective product at the end of the HCIA R2 period. Specifically, VillageCare was working with a Medicaid Special Needs Plan and technical vendors to identify and refine the most effective features of its

mobile platform and application. The mobile technology was designed to improve adherence to HIV treatment, with as little additional cost as possible. For example, VillageCare is testing the replacement of more expensive text-based medication reminders with notifications via free mobile applications. Most other awardees remain primarily concerned with effective implementation of their programs, rather than with refinements to minimize the cost of services.

2. Facilitators and challenges in planning and operationalizing payment models

At this early stage of payment model development, awardees were reporting many more challenges than facilitators to progress, with only a few providing examples of how initial difficulties had been overcome. Two themes emerged:

1. **Private payer or Medicaid managed care organization interest and involvement is generally recognized by the awardees as an important factor in model development and ultimate success.** The early involvement of payers (that is, those most relevant to the target population) was often reported as helpful to the programs, while issues around the payers sharing data or operating in a competitive or fragmented market were sometimes a hindrance. Because payer interest is critical for long-term sustainability, issues or program characteristics that supported or interfered with payer interest were either facilitators or challenges, respectively.
2. **Existing policies, payment levels, and payment routines may pose challenges to change.** However, there are also several examples of policy changes that have facilitated development of new payment models. Payment policies, levels, and processes are not under the control of the awardees, so the awardees must develop—and are working on developing—ways to surmount these challenges.

a. Facilitators for developing payment models

Despite the very early stage of payment model development, some awardees recognized one or more aspects of their staffing, payer engagement, savings potential, or external policy changes that were facilitating progress toward payment model development (Table III.10).

The most common facilitators noted by awardees to date have been (1) staffing the projects to include consultants or staff with appropriate data analysis experience and (2) partnering with payer organizations. Because of the early stage of payment model development, it is too soon to have examples of facilitators that will lead to successful implementation. However, the experience of one awardee—the American College of Cardiology, which had a head start relative to many other grantees due to its work prior to HCIA R2—illustrates the benefits of having both the necessary staffing resources and working with payers. The awardee had proposed a bundled payment but found that large insurers' IT systems could not process the bundled payment. Consequently, the awardee contracted with a vendor to operationalize the proposed payment model and translate it into codes that the insurers could process.

Table III.10. Facilitators for development of payment models

Facilitator	Awardees	Number of awardees
Using consultants or staff with the right experience in analyzing relevant data	ACCF, Altarum, Amerigroup, Avera, BMC, CCNC, Columbia, Four Seasons, GWU, Hopkins, Icahn, NACHRI, NHCHC, NM, SCH, UHCMC, U KS, U NC, Ventura, WI DHS, Yale	21
Partnering with payer organizations	ACCF, CCNC, DMC, FPHNY, Mesa, NACHRI, NHCHC, NM, NYCH+H, SCH, UMich, Ventura	12
Choosing interventions with a high potential for cost savings or broad applicability, which makes them more attractive to payers	CCNC, Mesa, NM, North Shore, NYCH+H, UHCMC, UMich, Ventura	8
Leveraging changes in national or local payment policies	Avera, Columbia, Mesa, NYCH+H	4
Sources:	Discussions with awardee and program staff during site visits from September to December 2015, and review of program narratives through the fourth program quarter (August 31, 2015).	
Notes:	Awardees may be counted in more than one row. Counts are probable underestimates because they are based on information volunteered in discussions with awardee and program staff and reported in individual awardee program narratives, rather than yes-no responses to questions about specific actions or features.	

It is also too soon to assess the impact of the other two types of facilitators cited by awardees—(1) choosing interventions with high potential for cost savings or broad applicability and (2) leveraging external policy changes. High cost savings or broad applicability projects include cancer care, “prehabilitation” prior to surgery, remote patient monitoring for diabetes, and a special protocol for low-acuity 911 callers. Examples of external policy changes include a new CMS policy that allows the direct payment by Medicaid to community health workers under a delegated model of management and a local ordinance that allows the EMS to bill for the program’s services.

b. Challenges to and strategies for implementing payment reform models

Awardees faced a wide variety of challenges to implementing payment reform models. The most common challenges are listed in Table III.11, and they are discussed below. In addition, many awardees faced unique or anticipated challenges as their payment model development work progressed. These ranged widely from pharmacists having difficulty planning how to fit new tasks and payments into existing workflows that were based on traditional payments to difficulty building a payment model for a model of care that is still evolving to worry about the implications of not being able to cover costs for a piece of the program valued by consumers (support for cell phone contracts) after the award period.

Table III.11. Challenges to development of payment models common to several awardees

Challenge	How the challenge impedes progress	Awardees	Number of awardees
Difficulties or delays in obtaining data	Delays progress in calculating payment rates and setting thresholds and targets, where applicable	Altarum, BMC, CHIIC, CHS, Clifford Beers, FPHNY, Four Seasons, Mesa, NACHRI, NM, SCH, U KS, U NC	13
State or federal payment policies limit opportunities for covering costs	Makes it more difficult to find potential ways to sustain the innovation	Avera, BMC, CHIIC, CHS, GWU, Mesa, NACHRI, Wash U, Yale	9
Local market factors	Requires awardees to overcome unique local challenges in addition to more typical ones	CHS, NACHRI, UCSD, U KS	4
Number or types of enrollees not as favorable to savings as expected	Undermines interest by payers needed for sustainability	Amerigroup, Clifford Beers, Hopkins, NHCHC	4

Sources: Discussions with awardee and program staff during site visits from September to December 2015, and review of program narratives through the fourth program quarter (August 31, 2015).

Notes: Awardees may be counted in more than one row. Counts are probable underestimates because they are based on information volunteered in discussions with awardee and program staff and reported in individual awardee program narratives, rather than yes-no responses to questions about specific actions or features.

Difficulties and delays in obtaining data were by far the most common challenges.

These difficulties and delays occurred regardless of whether the data were from Medicaid, Medicare, or private payers. Three awardees reported delays in obtaining Medicaid data from payer partners. One awardee that was having difficulty obtaining Medicaid data from the state instead requested the data through the CMS Research and Data Analysis Center, whereas two others continue to wait for Medicaid data. Two more awardees have tried to obtain Medicare claims data; one request was approved, but the awardee is still waiting for the data, and the other request was denied, so the awardee is considering alternative sources. A total of 12 awardees have been able to begin at least some preliminary data analysis, as noted in Table III.11 above, including 4 of the 13 awardees that reported delays or difficulties.

State or federal regulatory and payment policies limit opportunities for covering costs in the long-term in diverse ways. For example, state regulations on paramedics' scope of practice are restrictive, calling into question whether any payment model will work if one program's paramedic-based services cannot be legally sustained (Yale University). Incentives in place for CAHs participating in the Medicare Shared Savings Program are at least partly offset by Medicare cost-based payment policy to these hospitals. For example, CAHs could not share in any benefit from the reduced costs associated with meeting the program's goal of reduced ED utilization because they by definition are reimbursed based on cost (Catholic Health Initiatives). CMS does not currently reimburse for one program's telemedicine or community health worker services (George Washington University). If one site (among several for a given awardee) lowers costs, it may lose disproportionate share hospital funding (Boston Medical Center). One awardee noted that the decision by the state not to expand Medicaid has constrained its ability to measure the cost of care in order to develop a capitated payment model (Children's Home Society).

In addition, several awardees explained that public-sector payment levels are currently too low to adequately support the proposed service packages for their programs. For example, one awardee (the Mesa Fire and Medical Department) reported that the Medicare transitional billing code results in payments that are too low to cover the projected costs of care-transition services for high-acuity patients with congestive heart failure. For another awardee (Washington University), the low level of Medicaid payment for contraceptive services means that the new Contraceptive Choice Center must attract privately insured patients in order to be viable over the long term. Finally, low payments for nursing home facilities pose a challenge to their willingness to pay for access to the tele-health visits offered by another awardee (Avera).

Local market factors have complicated progress for several awardees.

- The competitive culture of the marketplace makes it difficult for the University of California at San Diego to facilitate alignment of payers' approaches to better prevent heart attacks and strokes, as planned.
- The very fragmented insurance market in the area served by the Children's Home Society has contributed to the lack of payer involvement to date. The large number of uninsured children in the area also poses a challenge to future viability (due to the large presence of undocumented immigrants and the state's unwillingness to expand Medicaid).
- In some sites participating with the National Association of Children's Hospitals, managed care organizations are unwilling to explore alternative payment models for hospitals and other providers that are participating in the initiative for children with medical complexity.
- The rural hospitals in the University of Kansas's program are reportedly in financial distress, and there have been recent hospital closures in some areas. This means that the awardee must carefully test the model to ensure that it demonstrates that providers can thrive, rather than end up closing more facilities. Local competition, mistrust of outsiders attempting to change the health care delivery system, limited health care resources in some communities, and the fact that providers wishing to adopt one of the reform options may have to give up certain services (close inpatient beds) all make development of a payment model challenging.

A few awardees appear to be at risk of failing to develop a viable payment model, due to low enrollment numbers or unexpected characteristics of enrollees. Four awardees that have encountered a different mix of enrollee characteristics than anticipated or that have found that fewer people than anticipated met the eligibility criteria, are seeing their business case for producing cost savings undermined, regardless of the model planned. Additional awardees experienced lower-than-expected enrollment, but this had not (or not yet) affected their initial work on developing a payment model.

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IV. SUMMARY OF EVALUABILITY ASSESSMENT RESULTS

Mathematica has conducted a detailed assessment of the evaluability of each of the 39 HCIA R2 awardees—that is, the extent to which we believe we can produce meaningful estimates of program effects on Medicare and Medicaid spending, hospital admissions, unplanned readmissions, ED visits, and other important outcomes specific to each awardee. Section IV.A provides an overview of the difference-in-differences model, which is the optimal impact evaluation design given that most awardees did not conduct randomized controlled trials. Section IV.B summarizes the findings from evaluability assessments completed by Mathematica. We present the number of awardees that met each criterion considered when proposing the impact evaluation design, which helped determine which of three evaluability tiers the awardees were assigned to. We then summarize the proposed design, payers, and core outcomes by evaluability tier. Sections IV.C and IV.D focus on the 26 awardees in the highest evaluability tier (that is, Tier 1). After characterizing our level of confidence in the ability to construct a credible comparison group for each of the Tier 1 awardees, we present the key challenges facing several of them and the proposed strategies to address those challenges.

Before presenting the results of our evaluability assessment, it is important to emphasize two points. First, we conducted this assessment fairly early in the lifecycle of the awardees' programs. With more implementation experience, our assessment of the evaluability of each program could change. Second, the evaluability tiers are based solely on being able to generate the most rigorous quantitative impact estimates. We anticipate conducting some type of outcome evaluation based on a pre-post or descriptive analysis using alternative sources of data for awardees that remain in the lower (less evaluable) tiers.

A. Overview of optimal impact evaluation design

When possible, we recommend using a difference-in-differences model. The difference-in-differences model rests on the assumption that the difference in outcomes between a pre-intervention and post-intervention period for a well-selected comparison group will resemble the differences in outcomes between a pre-intervention and post-intervention period that would have been observed for the treatment group had the intervention not occurred. The difference in differences for outcomes between the two groups can thus be ascribed to the intervention. To achieve this, the optimal design matches treatment and potential comparison units on observable factors that influenced selection into treatment and may influence study outcomes. Typically, matching is done at the same level at which the treatment was assigned; for example, we expect to find comparison practices when an intervention is at the practice level. Although treatment and matched comparison units should be well-balanced after matching, we will use regression adjustment to control for observable characteristics of the study sample to ensure that the estimates are as robust as possible.

The analysis based on difference in differences will follow the beneficiaries from the time of enrollment or participation in an awardee's program—or from the time they are attributed to a provider in the awardee's program—until the end of the award period (even if they withdraw from the program or no longer receive care from the provider). Thus, we are implementing an

intent-to-treat evaluation approach. Similarly, we will follow matched beneficiaries in the comparison group from the time of pseudo enrollment—or, from the time they are attributed to a comparison provider—until the end of the evaluation period.⁸ In cases where we use panel data, we will also follow treatment and comparison participants in the pre-period.

We will use claims data to construct outcome measures for each beneficiary in both the treatment and comparison groups during the period before the intervention and during the intervention period. For awardees whose intervention covers only a limited period of time, such as 30 days after a hospital discharge, we will also examine effects on outcomes over this more limited period.

B. Summary of program evaluability

In this section, we summarize the evaluability of the awardees by using information from evaluability assessments completed by Mathematica from October to December 2015. First, we summarize the criteria required to assess program impacts, then we summarize the design, payers, and core outcomes in impact analyses by evaluability tier.

1. Summary of the criteria used to assess program impacts

We applied eight criteria to all HCIA R2 awardees as part of our assessment of whether each of the programs could be evaluated (see Table IV.1 and Appendix A, Table A.11). For each criterion, we consider the criterion to be met if Table IV.1 classifies the awardee as “yes” or “yes, qualified.”

Barriers to implementation. For 26 awardees, enrollment is progressing as expected or is slower than anticipated, but we do not believe enrollment is likely to be so low as to pose a substantial risk to the impact analysis. For 12 awardees, enrollment has been much slower than expected and may pose a substantial risk to the impact analysis. CMS provides three stages of attention regarding enrollment and implementation: (1) support from the implementation contractor (least serious), (2) programmatic assistance letter, and (3) corrective action plan (most serious). In at least a few cases, an awardee has progressed from receiving support from the implementation contractor to receiving a programmatic assistance letter. We will continue to stay abreast of developments regarding enrollment at those sites, especially because enrollment may affect whether we have sufficient statistical power to assess core outcomes. For one awardee (Mount Sinai), the risk of enrollment issues is less certain. Because the awardee began recruiting for a new arm of the intervention in October 2015, we will continue to gather information about enrollment as the implementation continues.

Expectation of improving outcomes. All awardees expect to reduce expenditures and improve other outcomes within three years. However, in two cases, some participants may not be followed long enough for possible impacts to be observed. For the University of California at

⁸ In some cases, pseudo enrollment dates are assigned to members of the comparison group to correspond to program enrollment dates for members of the treatment group.

San Diego, implementation and data delays will affect how long participants are followed. For the National Health Care for the Homeless, the observable impact may be affected by participants who leave respite care without completing the full intervention.

Identification of the treatment group in the post-period. We expect to be able to identify the treatment group in the post-period for more than three-quarters of the awardees (that is, 31 awardees). We should be able to identify the treatment group from lists of enrollees supplied by the awardee or by attributing patients to practices or other entities defined by the awardee. Our ability to identify the post-period treatment group for the other 8 awardees is potentially limited. For two of these awardees—the American College of Cardiology and the University of Michigan—we are expanding beyond enrollment criteria to select the treatment group. These awardees identify enrollees by using clinical data that are not available for potential comparison groups. Furthermore, for the American College of Cardiology, we cannot identify whether or the extent to which the intervention impacts a key outcome (initial ordering of imaging tests) if the post-period treatment group includes only enrollees. For both awardees, we will use a claims-based definition that enables us to identify sample members uniformly in the treatment and comparison groups for the pre-period and post-period. For three other awardees (Four Seasons, the University of Kansas and the University of California at San Diego), program entry is based heavily on clinical data that we cannot obtain for comparison groups. As a result, we have to determine whether we can model treatment group membership rather than simply creating a post-period treatment group that consists of all enrollees. For Amerigroup, obtaining data in the post-period after a patient leaves foster care requires linking Medicaid IDs through a crosswalk. For the Mesa Fire and Medical Department, we will not have post-period data for uninsured patients, which is the largest target population. The only awardee for which we are certain that we cannot identify the treatment group in the post-period is the Children’s Home Society. We do not expect Medicaid managed care data to be available within the time frame of the impact analysis. Further, Alpha-MAX is not an appropriate data source because of lags and other shortcomings that affect its utility for analyses involving Medicaid managed care enrollees. There are also too few Medicare participants to conduct an impact analysis.

Identification of the treatment group in the pre-period. We anticipate no major issues identifying the treatment group in the pre-period for 29 of the awardees. In cases where we will use panel data, the treatment group will be the same in the pre-period and post-period. For those awardees for which we will use an attribution algorithm or claims-based eligibility criteria, we will use the same approach to identify beneficiaries for the pre-period treatment group as we do to identify beneficiaries for the post-period treatment group. For the other 10 awardees, several factors affect whether we can identify the treatment group in one or both years of the pre-period. In most cases, these are the same factors that affect identification in the post-period, such as expanding beyond enrollment criteria to select the treatment group or needing to establish claims-based eligibility criteria. In two cases (the Seattle Children’s Hospital and Community Care of North Carolina), we face barriers to identifying the treatment group in the pre-period but not the post-period, because the target population includes Medicaid beneficiaries. Since the North Carolina Medicaid data vendor changed in July 2013, we will limit the pre-period for Community Care of North Carolina to 18 months to ensure that study variables are constructed

consistently throughout the study period. For the Seattle Children’s Hospital, the length of time for which we can identify the treatment group in the pre-period depends on whether we use Medicaid MCO data from Molina Healthcare or Alpha-MAX data (or T-MSIS when available). If we use data from Molina Healthcare, we will have no more than one year of pre-period data. If we use Alpha-MAX or T-MSIS data, the length of the pre-period for any member of the treatment group will depend on when the individual enrolled in Pediatric Partners in Care.

Availability of outcomes for the treatment group. We can use administrative data to measure core outcomes and some other key outcomes for the treatment group for nearly all awardees. The four core outcomes are (1) total Medicare and Medicaid expenditures, (2) rate of all-cause hospitalizations, (3) rate of ED visits that do not lead to a hospitalization, and (4) rate of 30-day unplanned hospital readmissions. For programs with expected low enrollment, we may instead use the likelihood of ED visits and hospitalizations rather than their rates. An exception to this is Washington University, for which we will use cost estimates from the literature. As noted above, we will not have outcomes for the Children’s Home Society because we are unable to obtain administrative data due to data lags and shortcomings for analyses involving Medicaid managed care enrollees. Two general caveats apply to some awardees for which we will use Medicaid data for the impact analysis. First, because Medicaid eligibility criteria can lead to intermittent episodes of disenrollment in some states, there may be periods during which outcomes cannot be captured in administrative data. Second, for impact analyses for which we will use Medicaid encounter data to measure expenditures, we will use proxy cost measures.

Identification of a credible comparison group. In most cases, we are able to define a comparison group in the pre-period and post-period, and data are available from the same source as for the treatment group. Therefore, the primary barriers to identifying a credible comparison group are replicating eligibility criteria and identifying a comparison group that is subject to the same local influences as the treatment group. We provide a brief summary here and further details in Section IV.C.

For 17 awardees, we expect no substantial limitations when replicating eligibility criteria. For 18 awardees, our ability to replicate eligibility criteria is somewhat limited—typically, because selection of the treatment group is partially based on criteria not available in claims data. In two cases (the Children’s Home Society and Washington University), we do not expect to be able to identify a comparison group using administrative data. We also need to conduct additional work to determine whether we can replicate criteria for 2 other awardees (Four Seasons and Columbia University). In most cases, we are able to identify a comparison group in the same area (15 awardees) or another area of the same state (17 awardees). For 2 awardees (Avera and the University of Michigan), the comparison group may come from another state, although we are not yet certain about this. For University of Illinois, we are also not yet certain about whether the comparison group will come from the same area or from another area of the state. For 3 other awardees (the Association of American Medical Colleges, Four Seasons, and Amerigroup), we expect to select a comparison group from another state. For example, for Four Seasons, we cannot identify the potential comparison beneficiaries in the awardee’s service area who were considered for referral to the program. We also do not expect to be able to identify

another area in the state with similar characteristics on measures such as health care use at the end of life.

Availability of outcomes for the comparison group. We expect to have outcomes available for the comparison group in all cases in which we can obtain outcomes for the treatment group in administrative data. For many awardees, this depends upon timely availability of Medicaid data (examples include Boston Medical Center and Wisconsin Department of Health Services). Several awardees have relevant outcome measures that cannot be captured for the comparison group because they are measured in survey or electronic health record data. For example, Mount Sinai identified beneficiary satisfaction and indicators of complications of care, such as use of Foley catheters, as key outcomes of its program.

Statistical power to detect effects for core outcomes. For about two-thirds of the awardees, we expect to have sufficient statistical power for at least one core outcome—that is, an 80 percent probability of detecting an effect at least as large as that projected by the awardee.⁹ For four of these awardees, we qualify this assessment. For two of them (Amerigroup and the University of California at San Francisco), we expect to have sufficient statistical power to detect either likelihood of hospitalization or ED visit, but not the number of hospitalizations or ED visits. For the National Health Care for the Homeless, whether we will have sufficient power depends on whether we can identify a comparison group and pool across Medicare and Medicaid. For the American College of Cardiology, we expect to have sufficient power to detect an effect on expenditures under a high-risk assumption but may not be able to detect an effect on expenditures under an average-risk assumption. Further, the American College of Cardiology assumes that study practices fully implement the program and that comparison group practices do not employ any of the program tools. Both assumptions are open to question.

Our power calculations depend on two key factors: (1) the awardees' projected enrollment and (2) their assumptions about effect size. If an awardee does not achieve the targeted enrollment, we will have less than 80 percent power to detect impacts of the magnitude expected by the awardee. Furthermore, if an awardee assumes that the effect will be large, the likelihood of detecting somewhat smaller but still meaningful effects may be substantially lower than 80 percent. Our enrollment estimates are based on the awardees' original projections and, when available, more current data. We also used the awardees' assumed effect sizes, but we did not systematically examine whether each effect size was plausible. In at least a few cases, the effect sizes proposed by an awardee appear to be much larger than what is likely to be achievable. Therefore, we also estimated the power to detect effects of 20 percent of the mean and 10 percent of the mean for each of the four core outcome measures in order to provide a more standardized assessment. However, the likelihood of achieving effects of these magnitudes is likely to vary widely across awardees, given the differences in both their target populations and their interventions.

⁹ We assumed a two-sided test with $p < 0.10$.

At this stage of program implementation, we do not expect to have sufficient statistical power for any core measures for four awardees: (1) Boston Medical Center, (2) Columbia University, (3) the Children’s Home Society, and (4) Washington University. Furthermore, we are uncertain about whether we will have sufficient statistical power for a core measure for six awardees: (1) Mount Sinai, (2) the University of Michigan, (3) the University of North Carolina, (4) the University of Kansas, (5) Johns Hopkins University, and (6) the University of California at San Diego. For at least four of those six awardees, we expect to have enough statistical power for at least one awardee-specified measure. For example, for Johns Hopkins University, we expect the sample size to be sufficiently large to allow us to detect a statistically significant difference in the likelihood of nursing home entry.

Although many of the awardees are implementing programs at the practice or site level, our minimum detectable effects (MDEs) do not explicitly account for clustering because the number of clusters is relatively small for the great majority of awardees, yielding extremely large MDEs. We will account for the non-independence of observations within a given practice by estimating program effects for each practice or site and then constructing a weighted average of the impacts for each practice. While appropriately estimating the variance of estimated program impacts for the participating practices, this approach does not allow us to draw any inferences about the statistical significance level or confidence interval around the impact estimates were the program to be implemented in other practices.

Table IV.1. Summary of the criteria required to assess program impacts

Criterion	Number of awardees			
	Yes	Yes, qualified	No	Uncertain
No major barriers to implementation	26	12	1	0
Program expected to improve one or more outcomes within three years	36	3	0	0
Can identify the treatment group in post-period (all three years)	31	6	1	1
Can identify the treatment group in pre-period for:				
One year	31	4	2	2
Two years	29	5	3	2
Outcomes available for the treatment group	37	1	1	0
Can identify a credible comparison group:				
Can replicate eligibility criteria	17	18	2	2
Subject to the same local influences	15	17	4	3
Can be defined in pre- and post-periods	37	1	1	0
Data available from the same source as the treatment group	31	2	2	4
Outcomes available for the comparison group	36	2	1	0
Statistical power to detect effects sufficient for at least one core outcome	25	4	4	6

Source: Evaluability assessments completed by Mathematica from October to December 2015.

Note: Information for individual awardees may differ from the evaluability assessment. In those cases, we may have obtained additional information after completing the evaluability assessment or judged a criterion differently after considering that criterion for all awardees. Our assessments rely on assumptions or estimates, and in some cases, those assessments are optimistic. For example, we may assume that an awardee will meet its enrollment projection or that Medicaid data will be available for the evaluation.

2. Summary of the design, payers, and core outcomes in impact analyses by evaluability tier

Evaluability Tier 1. Tier 1 indicates that we expect the following: (1) sufficient statistical power to detect effects the size the awardee anticipated for at least one core measure, (2) an available comparison group, (3) available administrative data, and (4) a difference-in-differences design. We assigned 26 awardees to evaluability Tier 1 (Table IV.2). Assigning an awardee to Tier 1 is necessary but not sufficient for conducting a rigorous impact analysis. In Section IV.C, we characterize our level of confidence in our ability to obtain data and to construct a credible comparison group for each of the Tier 1 awardees. Our assignment of an awardee to Tier 1 is based on several assumptions. In some cases, low enrollment, limited data availability, or challenges in identifying a credible comparison group may prevent us from estimating a difference-in-differences design.

Our recommended impact designs for the Tier 1 awardees have the following characteristics:

- For 18 of the Tier 1 awardees, we expect to use panel data for the analysis—that is, we will follow the same patients in the pre-period and post-period.
- For 7 other Tier 1 awardees, we anticipate using separate cross sections in the pre-period and post-period. This is most often appropriate when the intervention and propensity score matching occur at the practice or facility level. For example, for the Association of American Medical Colleges, selection into the program occurred at the academic medical center (AMC) level—that is, the AMCs applied to and were selected to participate in the program by the association. The eConsult and eReferral templates, the heart of the program, are embedded in the EMR systems at all primary care practices and community-based clinics affiliated with the AMC. All beneficiaries receiving services from PCPs at the AMC primary care practices have the potential to be affected by the program. For this awardee, we will match at the AMC level and use cross-sectional data, rather than panel data.
- For one Tier 1 awardee (the University of California at San Francisco), we will not use a difference-in-differences model or propensity score matching because the awardee is conducting a randomized clinical trial.

Table IV.2. Design, payers, and core outcomes in impact analyses, by evaluability tier and number of sites

Design, payers, and core outcomes		Number of sites
Evaluability tier 1^a		26
AAMC, ACCF, Altarum, Avera, Clifford Beers, CCC, CCNC, CHIIC, DMC, FPHNY, GWU, Mesa, Montefiore, NACHRI, NM, NYCH+H, North Shore, SCH, UCSF, UHCMC, UMich, UNM, Village Care, Ventura, WI DHS, Yale		
Proposed design	Difference-in-differences, panel data	18
	Difference-in-differences, cross-section	7
	Multivariate regression	1
Payers in the impact analysis	Medicare FFS (including dually eligible beneficiaries)	21
	Medicaid ^b	17
	Other (CHIP, private, uninsured, Medicare Advantage) ^c	4
Outcomes on which the awardee expects its program to have an impact	Expenditures	26
	Hospital admissions	19
	ED visits	22
	Hospital readmissions within 30 days	13
Evaluability tier 2^d		0
Evaluability tier 3^e		6
BMC, CHS, Hopkins, U KS, U NC, Wash U		
Proposed design	Difference-in-differences	3
	No impact analysis recommended currently; we will monitor data availability and enrollment	2
	Comparison of survey responses over time	1
Payers included in impact analysis ^f	Medicare FFS, including dually eligible beneficiaries	3
	Medicaid ^b	2
	Other (CHIP, private, uninsured, Medicare Advantage) ^c	1
Outcomes on which the awardee expects its program to have an impact	Expenditures	6
	Hospital admissions	1
	ED visits	2
	Hospital readmissions within 30 days	0
Evaluability tier TBD		7
Amerigroup, Columbia, Four Seasons, Icahn, NHCHC, UCSD, UIC		
Key factors that will determine whether we can conduct a rigorous impact analysis	Whether we can identify a credible comparison group	7
	Enrollment and statistical power for core outcomes	5
	Timely data availability	3
Payers included in impact analysis	Medicare FFS (including dually eligible beneficiaries)	4
	Medicaid ^b	5
	Other (CHIP, private, uninsured, Medicare Advantage) ^c	0
Outcomes on which the awardee expects its program to have an impact	Expenditures	7
	Hospital admissions	5
	ED visits	4
	Hospital readmissions within 30 days	3

Table IV.2 (*continued*)

Source: Evaluability assessments completed by Mathematica from October to December 2015.

Note: The impact analysis for an awardee may include more than one payer. Our assignments of awardees to evaluability tiers are based on several key assumptions and are subject to change as we learn more about each program. In some cases, low enrollment, limited data availability, or challenges in identifying a credible comparison group may cause us to change the tier assignment or prevent us from estimating the proposed design.

^aSample size expected to be adequate for at least one core measure; comparison group available; claims data in hand or expected; difference-in-differences design. Includes one awardee for which we recommend multivariate regression analysis because the awardee is conducting a randomized controlled trial. In many cases, we are uncertain but cautiously optimistic that we can select a credible comparison group, that enrollment will be sufficient and that we will have data in time to conduct an impact analysis. Further discussion on these concerns is presented in Section IV.C.

^bIncludes awardees for which we believe it is certain or likely that Medicaid beneficiaries will be included. Excludes awardees for which we are unsure about whether we can obtain Medicaid data in a timely fashion or whether the sample size will be large enough to warrant analyzing Medicaid beneficiaries.

^cIncludes awardees for which we believe it is certain or likely that other participants will be included. Excludes awardees for which we are unsure whether we can obtain data in a timely fashion or whether the sample size will be large enough to warrant analyzing a particular group of patients.

^dTier 2 awardees are those for which we cannot identify a credible comparison group. However, we would expect to obtain administrative data and would expect that the sample size would be adequate for at least one core measure.

^eTier 3 awardees are those for which we do not expect to obtain administrative data or we anticipate that the sample size will not be adequate for at least one core measure.

^fExcludes two awardees in Tier 3 for which we currently do not recommend an impact analysis (Boston Medical Center and Children's Home Society of Florida).

CHIP = Children's Health Insurance Program; ED = emergency department; FFS = fee-for-service; TBD = to be determined.

- For each Tier 1 awardee, we will include in the impact analysis all patient subgroups for which we expect to obtain data in a timely fashion and enrollment to be sufficient. We will include Medicare FFS beneficiaries in the impact analysis for 21 of the 26 Tier 1 awardees. We expect at least 17 of the impact analyses will include Medicaid beneficiaries. At least 4 of the impact analyses will include other patients, such as Medicare Advantage or CHIP.
- All of the Tier 1 awardees expect their program to reduce expenditures. About three-quarters expect their program to reduce hospital admissions (19 awardees) and ED visits (22 awardees). Half (13 awardees) expect their program to reduce hospital readmissions within 30 days of discharge.

Evaluability Tier 2. Tier 2 awardees are those for which we have concerns about our ability to identify a credible comparison group. However, we would still expect to obtain administrative data for these awardees and would expect that the sample size would be adequate for at least one core measure. We did not assign any awardees to evaluability Tier 2.

Evaluability Tier 3. Tier 3 awardees are those for which we have concerns about our ability to obtain administrative data or we anticipate that the sample size may not be adequate for at least one core measure. We assigned six awardees to evaluability Tier 3. For two of them

(Boston Medical Center and the Children’s Home Society), our concerns about data availability and enrollment are so severe that we recommend not pursuing a difference-in-differences analysis at this point of the evaluation and continuing to monitor data availability and enrollment. For Washington University, we recommend comparing awardee-collected survey responses over time with publicly available survey data. For the remaining three awardees in Tier 3 (the University of North Carolina, the University of Kansas, and Johns Hopkins University), we will have administrative data and can identify a credible comparison group. However, we do not know whether enrollment will be sufficient to provide power for at least one core outcome. For example, if we assume a reduction in original enrollment projections for the University of North Carolina based on first-year experience, we would expect to be able to detect impacts on awardee-specific outcomes, such as rates of surgery for lower back pain, but not on expenditures or other core outcomes. We plan to conduct impact analyses for all three such enrollees despite the questionable ability to detect effects on outcomes. Although the likelihood of detecting significant effects may appear low at this point, it could turn out that true effect sizes are greater than forecasted by the awardees. Similarly, the true variances of outcome measures may be smaller or the number of enrollees may be greater than the values used here to calculate MDEs. There is little reason, therefore, not to proceed with an impact evaluation for these awardees.

We have yet to make a recommendation about the impact analysis for seven awardees.

For all of these awardees—(1) Four Seasons, (2) Mount Sinai, (3) Amerigroup, (4) the University of Illinois, (5) Columbia University, (6) National Health Care for the Homeless, and (7) the University of California at San Diego—we have not yet determined whether we can identify a credible comparison group. In most of these cases, the awardee relies heavily on clinical data to determine program eligibility, and we do not know whether we can use administrative data to establish a credible approach to identify the comparison group. For some of these awardees, we also face challenges regarding enrollment or data availability.

- Enrollment into the Four Seasons program is based on a clinical assessment that is guided by a screening tool. The tool identifies significant risk factors such as physical limitations, serious illnesses, social determinants, and whether the provider would be surprised if the patient died in the next year. It is not possible to replicate this clinical assessment with claims and enrollment data. Therefore, we cannot ensure that a comparison group selected by using claims and enrollment data will be a proper counterfactual for the treatment group. In our view, the best approach will be to match treatment and comparison group members on the basis of patterns of utilization and expenditures in the period prior to death, emphasizing to the extent possible those measures included in the awardee’s tool for referral to the program. This approach requires that we defer the selection of a comparison group until a substantial share of the treatment group has died. Restricting the treatment and potential comparison groups to beneficiaries who died within a certain period of time may help us identify people whose primary condition was end-stage when they entered our sample.
- The Mount Sinai program has two arms: (1) acute care and (2) rehabilitation. The acute care arm cannot be evaluated because of eligibility criteria that rely heavily on clinical

assessments and low enrollment. It may be possible to evaluate instead the rehabilitation arm of the intervention, which began to enroll participants in mid-October 2015. We continue to gather information about enrollment and eligibility criteria so that we can assess the evaluability of the rehabilitation arm.

- The expanded eligibility criteria that Amerigroup is using may not allow us to identify a credible comparison group. We are likely to have to use foster care adolescents from one or two other states to have a sufficiently large comparison group, which raises concerns about differences in Medicaid and other policies across states that may affect outcomes. In addition, we have concerns about enrollment. There are only 1,175 foster care youths who are 17 to 20 years of age in Georgia, and only 694 of them are in the program's catchment counties. We will likely not have 80 percent power to detect 20 percent effects for continuous outcome measures. Furthermore, we will have 80 percent power to detect a 20 percent effect on binary outcomes only if Amerigroup is able to recruit about half of the eligible population (of 694 youths).
- We continue to explore whether we will be able to identify a credible comparison group for the University of Illinois. One strategy for identifying a comparison group relies on using enrolled patients who never received services, but we are concerned that this strategy may be subject to selection bias. A second strategy relies on using beneficiaries who live outside the treatment county (but within Illinois); however, it is unclear how difficult it would be to obtain data for this group and whether that comparison group would have face validity. We may also face challenges obtaining data for some enrollees. For example, about a quarter of the targeted enrollees are currently under UI Health Plus (about 1,600 enrollees), a Medicaid managed care plan. Because UI Health Plus is being absorbed by Blue Cross and Blue Shield of Illinois, having access to data after November 2015 for these enrollees will depend upon a contract between the University of Illinois and Blue Cross and Blue Shield. University of Illinois is in the process of formalizing their relationship with Blue Cross and Blue Shield.
- The design of and enrollment procedures for MySmileBuddy will present serious challenges to conducting a rigorous impact analysis for Columbia University. We face challenges in using claims data to identify children who are at risk for early childhood caries in order to create a comparison group. To address this issue, we will explore the data and assess whether we can limit the treatment group sample to those who receive any dental treatment so that we can identify a similar comparison group. This will limit statistical power but will help ensure a credible comparison group. In addition, the slow enrollment during the first few months raises serious concerns that the final sample size may leave the analysis substantially underpowered, especially for continuous measures.
- For the National Health Care for the Homeless, we will need to determine if the homeless V diagnosis codes on medical claims are a good method for identifying the treatment group so that the codes may be applied to the comparison group. To the degree that homeless V diagnosis codes on medical claims are not a good indicator of homelessness among the treatment group, we will likely not be able to identify a credible comparison group. Other major concerns about evaluability for this awardee are (1) timely availability of Medicaid

data, (2) continuous Medicaid eligibility of participants, and (3) participant retention in respite care for a duration that is long enough for the intervention to affect outcomes.

- The major concerns about evaluability for University of California at San Diego include (1) the uncertainty about how well we will be able to predict high-risk patients through claims data, (2) the timely availability of claims and encounter data, (3) the relatively small expected sample sizes, and (4) the small expected impacts that result from interventions of this nature within the three-year time frame of the award. We recommend deferring a final decision on whether this program can be evaluated until claims data become available for the treatment group. At that time, we can assess the three key parameters before making a final decision: (1) the percentage of Medicare treatment group members who are enrolled in Part D, (2) the success of the awardee in rapidly enrolling patients, and (3) whether our initial attempts to model treatment group membership are successful.

C. Challenges in identifying a credible comparison group

In this section, we provide an overview of the challenges of achieving comparison groups that are equivalent to the treatment group (prior to the intervention). We draw on the plans for comparison groups in the evaluability assessments for the individual HCIA R2 awardees. We focus principally on the 26 Tier 1 awardees, as identified in Table IV.3 and in Table A.11, for which we believe that for at least one core measure we (1) will have a sufficient sample size large enough to reliably detect impacts of the size the awardee anticipates, (2) can construct a comparison group, (3) can obtain claims data for both the treatment and comparison groups, and (4) can use a difference-in-differences design. We describe our current assessment of the prospects for developing credible comparison groups for the 26 Tier 1 awardees, the challenges for developing credible comparison groups, and the range of strategies we may use to address these challenges. We illustrate the challenges with some examples that represent the diversity of issues in data and design that we face and the types of solutions we will pursue.

In the discussion below, we do not include awardees for which we have found that the data or the sample might not support a comparison group design or those for which we are unable to determine evaluability at this time. In most cases, this is because we expect to have insufficient power to assess impacts on the four core measures or because we have major concerns about our ability to identify a credible comparison group or about data availability or enrollment. There are 13 such awardees in this group, 7 in the “to be determined” (TBD) category, and 6 in Tier 3. The awardees in the TBD group are Amerigroup, Columbia University, Four Seasons, Mount Sinai, National Health Care for the Homeless, University of California at San Diego, and University of Illinois. There are also six awardees in Tier 3 for which data and/or sample will be inadequate. These include: Boston Medical Center, Children’s Home Society, Johns Hopkins University, University of Kansas Hospital Authority, University of North Carolina, and Washington University (see Appendix A, Table A.11).

1. Identifying challenges to comparison group construction

Focusing only on awardees in Tier 1, we classified 26 awardees into two categories, based on the prospects for identifying a credible comparison group (see Table IV.3).

Table IV.3. Classification of awardees on prospects for identifying credibly equivalent comparison groups

Category 1: Reasonably confident (15 awardees)	Category 2: Uncertain prospects (11 awardees)
AAMC, Clifford Beers, CCC, CHIIC, CCNC, DMC, FPHNY, GWU, North Shore, NYCH+H, UHCMC, UCSF, VillageCare, Ventura, Yale	ACCF, Altarum, Avera, Mesa, Montefiore, NACHRI, NM, SCH, UMich, UNM, WI DHS

Note: Our assignments of awardees to evaluability tiers are based on several key assumptions and are subject to change as we learn more about each program. In some cases, low enrollment, limited data availability, or challenges in identifying a credible comparison group may cause us to change the tier assignment or prevent us from estimating the proposed design.

Category 1 (reasonably confident). For Category 1 awardees, we are reasonably certain that we can identify a credible comparison group. These awardees tend to share one or more of the following features, which help to establish a credible comparison group:

- Patients or providers that are the focus of the intervention have diagnoses, provider specialties, or other characteristics that are relatively common, suggesting that similar comparison entities are likely to be readily available.
- Markets or states where the intervention does not touch a large proportion of the eligible patients or providers, making it possible to draw comparisons from within the same markets as the treatment group—meaning that the comparison and treatment groups will both be exposed to the same market-level factors that can affect trends in outcomes over time
- Eligibility criteria based on factors that can be captured in medical claims—meaning that we should be able to readily identify and obtain comparable administrative data for comparison beneficiaries who meet the program’s eligibility criteria

Even in Category 1, however, the comparison groups are not ready-made. Some examples include:

- North Shore is implementing a care coordination intervention for chronic kidney disease patients in order to improve quality and lower costs in health care during the transition to end-stage renal disease. The inclusion criteria for the patients in the treatment group can be replicated in a comparison group drawn from the same geographical area by using Medicare and Medicaid claims data. Furthermore, although the proportion of people with chronic kidney disease is relatively small, the market area served is heavily populated, so there should be enough Medicare or Medicaid beneficiaries available in the area to draw a comparison sample. Thus, we are reasonably certain that the comparison group will be credible.
- CareChoice is implementing a transition-to-home program for Medicare beneficiaries who have been discharged from nursing homes. The comparison group will include nonparticipating CareChoice nursing facilities that are operating under the same

administrative structure as treatment group facilities. This should provide reasonable estimates of intervention impacts, but the comparison group may be affected by other programs in Minnesota that focus on hospital admissions and that may provide similar services.

For other awardees, such as those that target Medicaid beneficiaries, we have primarily chosen comparison groups that are within the same state as the awardee in order to ensure that the comparison group (1) is subject to the same Medicaid program rules and (2) has the same data source as the treatment group. However, because the within-state geographic areas to choose from are limited, sometimes the comparison group must be drawn from an area that, for example, is not as urban as the treatment group. Also, unlike randomized designs, in which treatment and control groups are drawn at the same time from the same stream, it may be difficult to replicate the point of intake with a comparison group in some of these cases. For example, patients who choose to enroll in a program may be more motivated or have unobserved reasons for believing they might benefit from the program. Therefore, a comparison group of patients with similar characteristics on claims files may differ in terms of unobserved needs or motivations that contribute to improvement through compliance or self-care.

Category 2 (uncertain prospects). For Category 2 awardees, we may be able to establish a credible comparison group, but this ability may depend upon currently unknown factors. In some cases, it will depend upon decisions that have not been finalized by awardees. In some cases, it will depend upon the characteristics of the individuals who are actually served by the awardees. And in some cases, we will not know how well practices can be matched until we actually attempt the matching with real data. In other words, for Category 2 awardees, we may not be able to resolve the questions of whether a credibly equivalent comparison group can be achieved until we try. Based on the completed evaluability assessments, we have fewer serious concerns for awardees identified as Category 2 than we do for awardees identified in the TBD tier. For example, we may not have the same data available for a comparison group that are to be used to identify eligible patients for the treatment group, but we may be able to identify a reasonable proxy in administrative data. This category includes awardees with one or more of the following characteristics, which could make finding a credible comparison group difficult:

- Statewide elements in the intervention that may preclude within-state comparison groups, depending upon the scope and degree of influences on other providers and patients
- Specialized providers or organizations with characteristics that may be difficult to match
- Serious lags in data availability for the treatment or potential comparison groups, making construction of matching variables difficult within the evaluation time frame
- System-level local interventions that may preclude an unaffected, within-market comparison group
- Patient targeting or enrollment based on clinical or other eligibility criteria not available on claims, for which comparable information may not be available for a comparison group

The types of issues we will encounter among Category 2 awardees are represented by these examples:

- Seattle Children’s Hospital is implementing the Pediatric Partners in Care (PPIC) program, a care management and coordination intervention for children with complex health conditions who are enrolled in both Medicaid and the Supplemental Security Income program. Other treatment group criteria include having a Predictive Risk Intelligence System (PRISM) score greater than 1. Children with a PRISM score less than 1 are also eligible (1) after any hospitalization, (2) after making two or more visits to the ED within a 90-day period, or (3) if they are assigned to a primary care practice that either cares for at least one complex patient or has 30 percent of its patients meet the eligibility criteria for PPIC. PRISM is a predictor of health care utilization unique to Washington State that uses a combination of claims data with linked Washington State social service data, which will not be available for children in the comparison group. We describe our planned approaches to dealing with this awardee’s challenges (and others with similar issues) in Section D.2 below.
- The National Association of Children’s Hospitals is implementing the Coordinating All Resources Effectively (CARE) program for children with medical complexity at 10 children’s hospital sites in seven states and the District of Columbia. The intervention group includes children who meet criteria for high risk according to the 3M Clinical Risk Grouping software, a claims-based software tool for risk measurement and prediction. This information may not be available for the comparison group. Moreover, it is likely that we will have a different data source for Medicaid data for the comparison group for as many as 9 of the 10 hospitals (because they span multiple Medicaid agencies) and there may be challenges in terms of lags in data availability. We describe our planned approaches to dealing with this awardee’s challenges in section D.4 below.
- The Wisconsin Department of Health Services is implementing a program to expand services for children with medical complexity, and it is partnering with two acute care children’s hospitals. We plan to draw a matched comparison group from areas within the state where children tend to not use the two intervention hospital sites. However, these potential comparison children will likely live in areas that are more rural than the areas in which the treatment group beneficiaries reside. Also, the target population is primarily Medicaid and timely data availability is not assured.

2. Issues that will require further exploration

Although we are reasonably confident that we can identify credible comparison groups for the awardees in Category 1, we will face challenges. Thus, some degree of caution is warranted. Our approach to dealing with these challenges will typically include matching on characteristics of markets, organizations or practices, and patients served. The specific methods and models used in matching and weights given to these factors will vary across awardees—each awardee situation is different, so each requires a tailored approach. For Category 1, we expect that conventional methods of matching (such as propensity scores) and using systematic objective criteria to assess the quality of matches will produce solid results with treatment and comparison groups that are credibly equivalent.

For Category 2 awardees, we will need to do further exploration as we develop an approach for each awardee. Difficulties that can impede constructing credible comparison groups in this category of awardees include the following:

- High degree of awardee selectivity in recruiting (or self-selection of) organizations, providers, or delivery systems that are involved in the demonstration, which cannot be readily replicated in claims or other data available for potential comparison groups
- Criteria for patient selection are based on factors not well represented in claims data
- Targeting small groups of patients with specific diagnoses and characteristics not commonly or readily found among patients of other providers
- Targeting patients based on clinical characteristics or stage of disease not represented on claims
- Statewide outreach or program elements that would affect comparison groups that are near to areas where the intervention is taking place
- Low participation rate among eligible patients

Ideally, comparison groups should be similar to what would be produced by random assignment so that the only pre-intervention differences are due to random variations in the normal distribution of patients. This would minimize bias in our estimates of intervention effects to a known degree of statistical precision. As a practical matter, with quasi-experimental designs we seek to establish that treatment and comparison groups are not significantly different on key observable predictors. With difference-in-differences comparisons, it is not a problem if the comparison group differs somewhat from the treatment group in unobserved factors determining outcomes, provided that those factors do not differentially affect the change in outcomes.

However, it may not always be clear that these assumptions can be met with any feasible comparison group. If this is the case, we would need to assess for each awardee whether it is likely that there remain any significant systematic differences between treatment and comparison groups that would affect the change in outcome measures and, furthermore, whether those differences are likely to be large or meaningfully different in magnitude relative to the expected levels of important outcomes. First, we would seek to understand whether the involved providers and their patients were typical of those in their area. If they are different, then we would need to know whether we can find similar providers in other areas for comparison and whether those providers and patients can be identified in comparable ways, such as from observable practice characteristics and claims data. This would require a careful assessment of each awardee situation by looking at the nature of the process for selection of the treatment groups and how differences, even unobserved differences, could affect key outcomes. In each case, we will consider both the likelihood and potential magnitude in any bias, as well as possible solutions.

D. Strategies to address challenges in identifying credible comparison groups

In this section, we discuss the types of strategies we will employ to establish effective equivalence of the treatment and comparison groups. We indicate our approach and provide some examples to illustrate how we will tailor the approach for defining a comparison group to the requirements of the situation for each HCIA R2 awardee.

1. Defining the treatment group more broadly

In some cases in which awardee eligibility or selection criteria are highly judgmental or involve elements not available in administrative data, it may not be possible to closely match the selection process and criteria used by the sites with data (such as claims) that are comparably available for the comparison group. In addition, with some awardees there is no formal enrollment, so the intervention effects must be measured for all of those potentially eligible for the program. In such cases, the best solution may be to define a treatment group somewhat more broadly than the group that receives the intervention services in the test sites. We would accept results for somewhat broader groups in order to ensure comparable and unbiased estimates of the impacts. We would then compare treatment and comparison groups that were similarly defined. This estimate will understate the effects for those who actually receive services, however. To account for this, we will divide the estimated difference among eligibles by the participation rate for the treatment group.

One consideration with this approach is the need to select the eligible population so as to maximize the participation rate among the treatment group eligibles. The sample size required to yield a particular minimum detectable difference for effects on those actually treated is equal to the sample size required when all treatment group members are participants divided by the square of the participation rate. For example, if only 50 percent of the expanded treatment group actually participated and the effects are concentrated only in that 50 percent, it would be necessary to detect an effect half the size in order to achieve the same precision. This requires a sample that is four times larger than is needed when all eligibles participate. This consideration may not be important with 80 percent participation. However, it presents a challenge if only 20 percent of eligibles participate. Thus, we may eliminate patients or providers from the evaluation-defined treatment group with characteristics that very few actual program participants have (even though this would mean the loss of a small number of participants) in order to reduce the size of the “eligible” treatment group and increase the participation rate among this group. Doing this effectively requires good judgment and much knowledge about the target population and the intervention, but it is an essential part of this evaluation for many awardees. Conclusions about program effects would apply to the resulting evaluation treatment group as redefined. These estimated effects may differ from the effects that would have been observed if it were possible to exactly replicate the group receiving the intervention.

The following are examples:

- The American College of Cardiology expects to enroll participants using a screening tool for cardiac risk. Similar data will not be available for potential comparison groups. Moreover, it is expected that the requirement to use the screening tool to determine appropriateness will deter use of tests for those not expected to meet the appropriateness criteria. So, one intended outcome of the intervention is to avoid unnecessary testing. Thus, an important impact may be to reduce use of tests needed to establish eligibility for enrollment in the program. Therefore, for this awardee, we will identify treatment and comparison group patients in the same way, by using claims data. Specifically, we will select individuals who have (1) been diagnosed with chest pain, (2) received noninvasive cardiac imaging, or (3) visited a cardiologist—excluding those (more serious cases) that received cardiac catheterization without a noninvasive test. Until we examine the data, we will not know how much the evaluation-designated treatment group has to be increased beyond those actually enrolled in the program. Nor will we know until we look at the outcomes the extent to which the intervention may have deterred use of early testing prior to an enrollment decision.
- The University of Michigan is using a clinical assessment tool to determine a patient's level of risk for surgical complications. Only patients scheduled for one of 13 major abdominal surgeries who are identified as high risk based on the results of their clinical assessment are enrolled in the intervention. Comparable assessment data and risk scores will not be available for the comparison group. In this case, we will include a "super enrollment" sample of all individuals whose claims contain any of the 13 targeted Current Procedural Terminology (CPT) codes, without consideration of risk score, to ensure a comparable mix of risk among treatment and comparison groups. We can further refine the analysis sample by estimating a participation equation among this larger pool of potential eligibles and use the estimated model to calculate predicted probabilities of participation for all potential treatment and potential comparison group members. Differences in outcomes between the two groups of eligibles can then be estimated for patients within each decile of this predicted probability (0 to 0.10, 0.10 to 0.20, and so on); a weighted average can be constructed to estimate overall effects. Instead of using the screening tool, one of the implementing sites is enrolling all patients with a scheduled eligible surgery. For this site, we will be able to estimate program impacts for the larger, equivalently defined groups based on procedure codes available in claims data.
- For Nebraska Medicine, we also plan to define the treatment group more broadly than the group that actually receives services (care management, telemedicine, and family engagement). This is because (1) we cannot capture many of the inclusion and exclusion criteria (for example, the ability to read English, use a glucometer, and operate the remote patient monitoring (RPM) equipment) by using administrative data, and (2) we have no way of ascertaining which people in the comparison group would have refused treatment had it been offered to them. The treatment group will therefore be defined as Medicare beneficiaries residing in Douglas or Sarpy counties in Nebraska who were discharged from an inpatient stay at Nebraska Medicine with a primary or secondary diagnosis of type 2 diabetes. The comparison group will be selected with propensity score matching (on

characteristics and prior use patterns) from patients with a target diagnosis of type 2 diabetes who are discharged from the six other general medical surgical hospitals in Omaha, Nebraska.

2. Obtaining additional data or constructing proxy measures for the comparison group

In some cases, we have approached the challenges presented by the inability to replicate treatment group criteria by obtaining data in addition to the claims data we are routinely obtaining for comparison groups. The following are examples:

- Case Medical Center is enrolling late-stage cancer patients into its intervention to improve clinical outcomes and decrease costs. Because cancer stage is not easily or accurately identifiable with claims data, we have obtained cancer staging information for all patients diagnosed with cancer from Ohio's cancer registry, which we will match with claims data in order to construct a comparison group of late-stage cancer patients.
- Seattle Children's Hospital has a treatment group that is identified using criteria from the PRISM tool to identify high-risk children. PRISM scores will not be available for comparison group children. Therefore, in evaluating this awardee, we will use one of two possible strategies to identify higher-risk children to include in the comparison group. The first strategy will be to develop proxy PRISM scores by using available claims data. If the original PRISM scores and the proxy PRISM scores are strongly positively correlated, we will automatically include in our comparison group children with proxy PRISM scores greater than 1. Otherwise, the second strategy will involve applying the Pediatric Medical Complexity Algorithm categories to select comparison group members in order to approximate enrollment into PPIC. This will approximate most of the PRISM criteria, but not all.

3. Selecting comparison organizations

The HCIA R2 awardees comprise a diverse set of organizations, many with distinct or even unique characteristics. Replicating the institutional environment for comparison groups, therefore, presents some challenges. Our objective is to ensure that the comparison group is representatively equivalent to the treatment group in both the types of patients and the organizational settings in which the interventions operate. In some cases, we can accomplish this by selecting comparison group sites within the same health care system or same geographic locations (city or state). In other cases, it will be necessary to seek comparison groups in nearby markets or states with similar characteristics for both the delivery system and participating organizations.

Our strategy will be to select comparison groups so as to minimize risks of bias to impact estimates, such as Medicare costs, readmissions, or other awardee-specific outcome measures relevant to the intervention. This approach may create trade-offs between sources of risk, such as the following:

- Risk of the intervention affecting (contaminating) non-treatment-group patients in the local market (e.g., from effects on care delivery patterns)—meaning, a high market share of treatment providers may preclude a within-market comparison group or may saturate services to a finite local target population
- Risk of distinct market characteristics—meaning that comparison groups in other markets may face distinct trends or rates of cost change due to local payer policies or adoption of cost-saving, or more costly, technology by major providers in the market
- Risk of state-specific financing or programs—meaning that selecting comparisons from states other than the treatment state means that the comparison group will not be subject to the same statewide forces affecting trends in outcomes, which may be particularly important for awardees targeting lower-income people served by Medicaid or other state and local programs.
- Risk of distinctly changing practice styles—meaning that treatment and comparison practices, even without the intervention, may be changing patterns of care at different rates in ways that may or may be related to practice size, specialty mix, age of practitioners, maturity of data systems, and use of supporting personnel

In general, we prefer use of within-system and within-state comparison sites when feasible, but in many cases the remaining candidates for comparison groups may not be similar in all important characteristics. This is particularly true if the intervention is affecting a large share of patients or providers within the system or state. In such cases, we will look for comparison providers with matching characteristics in adjacent locations with similar health system environments and with comparable baseline trends in outcomes. The following are examples:

- For Montefiore Medical Center, we can use nonparticipating sites within the Montefiore system for all or part of the comparison group. These sites appear to provide comparable within-system practices that would be uncontaminated by the intervention. All of Montefiore's sites provide comprehensive medical care services in a wide range of medical specialties and all sites serve many age groups. However, we will need to engage in discussions with the awardee on the characteristics and organizational relationships of each site. Furthermore, we will need to match on site and patient characteristics before finalizing selection of comparison sites. Typical of nonrandomized designs, results could be biased to the extent that these characteristics do not capture unmeasured differences. Such biases could arise from Montefiore Medical Center's participating sites being selected, or self-selecting, because they are more advanced and ready to change than are nonparticipating sites, or they have already started some aspect of the intervention. However, using Montefiore Medical Center's sites improves the comparison group because practices within the awardee's system are more likely to be similar to each other (in terms of health IT use and practice patterns) than to other potential comparison practices. Moreover, using the Montefiore Medical Center practices allows us to control for patient characteristics and clinical information available in the EMR system; such information would not be available if we used practices not owned by Montefiore Medical Center.

- The American College of Cardiology has involved organizations with dominant market shares representing most cardiology practices in Wisconsin, but treatment group practices represents a much smaller share of the market in Florida. This enables a within-state comparison group in Florida. However, in Wisconsin, we will need to find comparison practices in comparable areas in surrounding states (including, downstate Illinois [outside Chicago and suburbs], Iowa, Michigan, and Minnesota).

4. Obtaining necessary data in a timely manner

One of the potential barriers to establishing an equivalent comparison group, particularly for interventions serving Medicaid beneficiaries, is the lack of timely outcome data for matching baseline characteristics at the patient level. For such awardees, lags in Medicaid data availability for outcome measures vary by state and may be considerable. In other words, the data pertaining to comparison groups from the same time period as the intervention may not be available during the evaluation period. The following are examples:

- The National Association of Children's Hospitals is implementing the CARE program for Medicaid-enrolled children in seven different states and the District of Columbia. Children will only be enrolled in the treatment group if their insurance provider (Medicaid agency or Medicaid managed care plan) agreed to cooperate with the CARE program by providing claims or encounter data for the treatment group. The same is not true for the comparison group. Therefore, we have proposed three options for obtaining the necessary Medicaid data for both the treatment and the comparison group in a timely manner:
 - Use Medicaid data from the awardee, if possible.
 - Use Medicaid data from CMS (including, T-MSIS, MAX, and Alpha-MAX). This is a good option in California, Florida, Missouri, Ohio, and Texas. But this is not a good option for hospitals in Pennsylvania and Washington, D.C., due to the long data lag in Washington and to the high use of managed care in both jurisdictions (neither submits managed care encounter data to CMS, so their data will not be available in T-MSIS, MAX, or Alpha-MAX).
 - Use comparison group data from another state. For hospitals in Pennsylvania and DC, we will consider whether we can match treatment group children to comparison group children in another state for which we have data, such as Colorado. If there are major challenges to receiving Medicaid data for a comparison group in certain sites, we may use data from the awardee's proprietary Pediatric Health Information System data set, which includes patient-level demographics, procedures, diagnoses, and clinical details from more than 40 children's hospitals that are members of the National Association of Children's Hospitals. Hospitals pull the data from both their medical records and billing systems, so the data set includes EMR data.

- George Washington University's¹⁰ intervention includes participants in Washington, DC. To facilitate timely acquisition of data, we will be seeking data for treatment and comparison groups directly from the District's Department of Health Care Finance, which should include all FFS claims and managed care encounter data. The awardee is facilitating access to data in Washington, DC. Delays in access could diminish our ability to establish comparable treatment and comparison groups and to measuring key outcomes data.

5. Overall prospects for establishing equivalent comparison groups

For each of the HCIA R2 awardee interventions we will select a comparison group tailored to the particular situation of the intervention, markets, providers, and patients involved. We are reasonably confident that effectively equivalent comparison groups can be found to support meaningful impact estimates for at least 15 of the 26 awardees (the Category 1 awardees, as identified in Section IV.C.1)—and probably more—with adequate sample size and claims data available for at least one core outcome measure sufficient to support a difference-in-differences analysis.

Among the other 11 awardees (the Category 2 awardees), particularly where propensity score matching of patients may not be possible with claims data, results will depend upon what we discover as we learn more about the providers and practices involved, resolve questions of timely access to Medicaid data, begin to look at data on characteristics and patterns of care for the enrolled patients, and consider the trade-offs involved in selecting comparison providers. In many cases, we expect to arrive at satisfactory solutions. In some cases, that will entail some reduction in statistical power to detect effects. In other cases, data access issues could make it impossible to construct the key outcomes required. Finally, in some instances, there may remain uncertainty related to whether results are due in part to distinct and unavoidable differences in how treatment and comparison groups are selected.

We have not yet been able to determine evaluability for 7 awardees because we have not yet determined whether we can identify a credible comparison group. For some of these awardees, we also face challenges regarding enrollment or data availability. Finally, there are 6 awardees in Tier 3 that are problematic for one or more of the following reasons: we do not know whether enrollment will be sufficient to provide power to measure impacts on at least one core outcome; we do not expect to be able to obtain needed data; or we are unable to establish a credible comparison group.

Overall, we are reasonably confident that by giving attention to the types of evaluation issues illustrated in the examples above, we can establish a comparable comparison group needed to support a difference-in-differences analysis for the majority of the HCIA R2 awardee programs. When we cannot identify a credible comparison group and a difference-in-differences

¹⁰ George Washington University is in Category 1 for its HIV-positive group to be evaluated with a difference-in-differences matched external comparison group design and Category 2 for its at-risk group evaluated with an internal comparison group (see Section IV.C).

analysis is not possible, we will attempt to evaluate program outcomes using alternative approaches, such as pre-post or descriptive analyses, based on awardee-collected claims data, EMR data, or program data. We are awaiting and continuing to pursue the additional information we need to determine the best approach to evaluate program outcomes for awardees that fall into this group.

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V. CONCLUSIONS AND IMPLICATIONS

A. Implementation evaluation

This section summarizes the main conclusions from the implementation evaluation pertaining to both service delivery and payment models and highlights several implications for the future evaluation.

1. Implementation of service delivery models

When implementing a new and innovative program, it is not unusual for organizations to experience challenges that lead to design adaptations. All 39 HCIA R2 awardees needed to adjust their program designs during the first year to better support program goals. This included modifying recruitment, referral, or enrollment processes; making adjustments to service delivery protocols; altering staffing structures; and implementing IT changes, among other types of modifications. These adjustments acknowledged and responded to unexpected barriers that had hindered implementation—most often, in ways that slowed enrollment.

It is too early to tell whether the strategies awardees adopted will prove effective at helping them overcome implementation challenges. But there is some evidence to suggest that new communication tactics—such as to improve clarity about the programs among staff; or between staff, partners, and subcontractors; or between staff and target participants—were needed. This strategy may help awardees offset and perhaps overcome first-year delays. We found no striking or obvious patterns when comparing the characteristics of awardees that experienced delays and those that did not. Future research will help identify whether certain awardee characteristics are associated with more or less success and why that is so.

These programs are still too new to gauge overall implementation success. However, we have been able to review implementation progress by using metrics for operational months and enrollment. As of the end of August 2015, only six programs had met or exceeded their targeted enrollment levels for Year 1. As might be expected, programs that have been operational for longer are more likely to have met or exceeded their enrollment target. We also found that awardees actively enrolling participants are more likely to have met or exceeded first-year enrollment targets than awardees that passively enroll participants. The reason behind this is less obvious. We speculate that awardees with active enrollment may be more focused on recruitment because the success of their programs depends upon enrolling individual patients into the program. However, programs requiring active enrollment also tend to have smaller enrollment targets on average.

Anecdotal reports from some awardees suggest that the strategies they are using to overcome implementation challenges are improving enrollment, but more time and more data are needed to understand the overall effect. Some awardees are likely to find that strategies to increase enrollment are only marginally effective given the nature of their challenge. In addition, awardees may encounter new and different enrollment challenges in the future as the programs

continue to evolve and mature. For example, although Boston Medical Center currently exceeds its first-year enrollment goals and Ventura County Health Care is on schedule, staff at both programs noted that they might be enrolling participants who are the easiest to identify—making enrollment in the later years of the award more difficult. We will continue to track this and other enrollment challenges and strategies during the second and third years of the awards.

Several factors have already emerged as important determinants of early implementation effectiveness. The most commonly mentioned facilitators of implementation in Year 1 were the following:

- Strong staff engagement, most notably (1) having buy-in and belief across staff levels that the project provides benefits to patients and (2) having strong program champions who motivate and support staff
- Being able to build on prior experience and past or concurrent projects to leverage staff knowledge and existing tools
- Well-functioning teams with strong communication among staff members, who benefit from multidisciplinary expertise and shared learning

The most commonly mentioned barriers to implementation in Year 1 were the following:

- Insufficient or variable staff buy-in and participation, most notably due to (1) multiple competing priorities and demands on their time and (2) a need for clearer protocols and definitions of care processes as well as of staff roles and responsibilities
- Issues with health IT, mostly the fact that awardees had difficulty integrating the project health IT components into providers' and partners' existing IT systems¹¹
- Handling unanticipated complexity of participant's needs and life characteristics and the complexity of participant's competing social needs and other needs and circumstances

2. Planning and implementation of payment models

Awardees are also still in the early stages of developing their payment models. Even at this early stage, it is apparent that awardees face many challenges—some common ones and some unique to the particular awardee—in completing their award period with a viable payment model. Many of the payment reform challenges relate to the complexity of the proposed model. Issues with provider acceptance of complex payment models could prove particularly salient

¹¹ This was exacerbated by the fact that implementation partners and provider organizations working with an awardee often used multiple and different EMRs that had widely varying levels of functionality. Awardees faced challenges either in developing interfaces that worked for all sites (due to cost) or in providing individualized help to overcome site-specific problems.

when the focus of the innovation is on an important yet narrowly focused segment of most providers' patient panels.

As awardees overcome delays in obtaining data and enter the technical phase of payment model development, CMS should continue its current efforts to facilitate an exchange of information and ideas among the awardee technical staff or consultants who are developing similar payment models (for example, through a listserv). A few awardees have already been grappling with technical issues that others might benefit from anticipating, such as payers' inability to process bundled payment codes and dealing with outliers when setting shared savings targets.

We will continue to gather information on the barriers and facilitators that awardees face in implementing their payment models, including securing commitments from providers, payers, state agencies, and other stakeholders. These factors are likely to change over time as the health system responds to potential changes in national or state health policies relevant for a given awardee. Other factors might also include changes in health programs and policies within CMS's control and influence, such as value-based purchasing; bundled payments; payments to critical access hospitals; other hospitals and services exempted from the prospective payment system; disproportionate share payments; and restrictions on payments for paramedics, community health workers, and tele-health services.

Ultimately, the underlying costs and benefits of the innovations will be key in enlisting the help of payers and policymakers in overcoming existing barriers to sustaining the intervention. Therefore, for many awardees, critical next steps for their program generally and for their payment model development especially include (1) achieving broad-based participation goals and (2) identifying any opportunities to trim innovation costs without sacrificing essential features. To the extent that the characteristics of actual enrollment for a few awardees suggest that net cost savings will be impossible to achieve, CMS might choose to minimize investments in payment model-related activities for these awardees.

3. Implications for evaluation

These early implementation evaluation findings suggest several key topics to be explored during the second year of our evaluation:

- The lack of success in recruitment and enrollment among many awardees continues to be the main threat to deriving meaningful estimates of program impacts on patient outcomes. We will continue to monitor recruitment and enrollment closely and reassess our ability to detect differences with potentially smaller study populations.
- Changes in how awardees define their target populations and intervention protocols will determine how we define both treatment and comparison groups for the evaluation. We will gather more information about these operational changes and assess how they affect (1) our ability to identify the treatment and comparison groups and (2) the strategies we use to identify them. For example, to the extent that redefined target populations are less costly or

complex than the original target population, the broader eligibility criteria might reduce the potential impact of the program on service utilization and costs.

- Few of the characteristics we examined (other than active enrollment and longer operational months) correlated directly with achieving enrollment targets. During the second year of the cooperative agreements, we will explore more thoroughly the relationship of awardee, program, and target population characteristics (including targeted enrollment size and complexity, number of implementing sites, recruitment and enrollment processes, and the relationship of these sites to the awardee organization) to achieving enrollment targets.
- Several common facilitators and barriers to implementation effectiveness have begun to emerge during the first year of the evaluation. We will adapt our data collection protocols to continue exploring the factors that promote or inhibit the successful implementation of these service delivery and payment models during the second year of program operations.
- We will continue to monitor awardee progress in developing and implementing the proposed payment models. Our goals will be to assess (1) whether awardees (where applicable) have the data they need to flesh out these models fully and clearly, (2) whether the models appear to be acceptable to payers and providers, and (3) whether the models lead to the intended changes in provider behavior.

B. Impact evaluation

The ability to effectively evaluate new service delivery models with quasi-experimental designs hinges on (1) having sufficient power to detect effects on key outcomes, (2) selecting appropriate measurement and evaluation methods, (3) having the ability to obtain needed data, and (4) establishing an equivalent comparison group. The 39 HCIA R2 awardees are pursuing a wide range of target populations and interventions, which are being implemented in a diverse array of settings. Valid comparisons require establishing credible comparison groups to represent what would have happened to the treatment groups in the absence of the intervention. For provider-centered interventions, we will seek providers in comparable health care delivery systems (in terms of resources and organizational structure) that are suitable for applying the model with similar patients (in terms of demographics, medical conditions, and stage of disease or need for intervention services). For community- or patient-level interventions, we will seek a comparable group of patients to serve as the comparison sample.

Although all awardees will have an implementation evaluation and some type of further analysis, the extent to which we will be able to conduct a rigorous difference-in-differences analysis of program impacts on patient outcomes will be based on the following eight factors:

- Barriers to implementation
- Expectation of improving outcomes by a moderate amount
- Ability to identify the treatment group in the post-period
- Ability to identify the treatment group in the pre-period

- Availability of outcome measures for the treatment group
- Ability to identify a credible comparison group
- Availability of outcome measures for the comparison group
- Statistical power to detect effects on core outcomes

Based solely on being able to generate rigorous quantitative impact estimates, we grouped the awardees into three evaluability tiers. We conducted this assessment fairly early in the lifecycle of the awardees' programs. With more implementation experience, our assessment of the evaluability of each program could change.

We identified 26 awardees as evaluability Tier 1, which means that we expect they will meet these eight criteria. For these awardees, we expect to have sufficient statistical power to detect effects the size that the awardee anticipated for at least one core measure (based on a comparison group that we can identify and using a difference-in-differences design applied to administrative data).¹² Among these awardees, we have reasonable confidence that a rigorous difference-in-differences analysis can be supported for 15 awardees (referred to as Tier 1, Category 1; see Table V.1). For the remaining 11 awardees, we are not yet confident about the ability to identify a credible comparison group or obtain timely access to needed data (referred to as Tier 1, Category 2). Tier 2 awardees are those for which we have concerns about our ability to identify a credible comparison group, but for which we would still expect to obtain administrative data and a sample large enough to detect meaningful pre-post differences on at least one core measure. We do not have any awardees in this tier. We assigned six awardees to Tier 3. This tier indicates that—at the time of conducting our assessment—we are not yet confident that we will be able to obtain either administrative data or an adequate sample size for at least one core measure. Finally, there remain 7 other awardees for which we have not yet determined whether we can identify a credible comparison group (referred to as Tier TBD). For some of the awardees in Tier TBD, we also face potential problems regarding adequate enrollment or data availability.

Each of these sets of awardees presents a different set of evaluation issues. For the Tier 1, Category 1 group, we can proceed with a straightforward difference-in-differences evaluation based on administrative claims data (with the exception of the University of California at San Francisco, for which we will use a randomized design). However, we will need to select the comparison groups carefully, balancing concerns for the prior equivalence of treatment and comparison groups (and the face validity of the comparison group) against concerns about possible contamination of the comparison group as a result of the awardee's actions.

For the Tier 1, Category 2 group, we will continue to refine our strategies for estimating program impacts by addressing the distinct challenges presented by each awardee to identifying

¹² The four core measures are (1) total Medicare and Medicaid expenditures, (2) rate of all-cause hospitalizations, (3) rate of ED visits that do not lead to a hospitalization, and (4) rate of 30-day unplanned hospital readmissions. For programs with expected low enrollment (such as the University of California at San Francisco and Amerigroup), we may instead use the likelihood of ED visits and hospitalizations.

a credible comparison group. This may entail, for example, using external comparison groups when comparison groups must come from other markets or states in order to avoid contaminating influences. In cases in which there are elements in the provider selection or patient eligibility and recruitment processes that cannot be replicated, the strategy may entail defining the treatment group more broadly than the actual participants to enable identification of a comparable comparison group. In some cases, the analysis will require limiting the scope of the evaluation sample to the subset of program enrollees (for example, those in Medicare FFS) for whom administrative data are available. We will seek to better understand and replicate or represent the processes for provider or practice recruitment and for selection criteria and patient enrollment. As data become available, it will be necessary to ascertain how well we can match patients and providers on observable characteristics, including prior utilization experience.

Table V.1. HCIA R2 awardees by evaluability tier

Evaluability tier	Definition	Number of awardees	Awardees
Tier 1 Category 1	Reasonable confidence in ability to conduct rigorous difference-in-differences analysis	15	AAMC, CCC, CCNC, CHIIC, Clifford Beers, DMC, FPHNY, GWU, North Shore, NYCH+H, UCSF, UHCMC, Ventura, VillageCare, Yale
Tier 1 Category 2	Meets most criteria for Tier 1, but some concern about ability to identify a credible comparison group or get timely access to needed data	11	ACCF, Altarum, Avera, Mesa, Montefiore, NACHRI, NM, SCH, UMich, UNM, WI DHS
Tier 2	Unable to construct comparison group	0	None
Tier 3	Inadequate sample size to detect meaningful differences or no administrative data	6	BMC, CHS, Hopkins, U NC, U KS, Wash U
Tier TBD	Too little information currently available to assess evaluability fully	7	Amerigroup, Columbia, Four Seasons, Icahn, NHCHC, UCSD, UIC

Source: Evaluability assessments submitted to CMS by Mathematica from October to December 2015.

Note: Tier 1 means that we expect to have (1) sufficient statistical power to detect effects the size that the awardee anticipated for at least one core measure, (2) an available comparison group, and (3) available administrative data to support a difference-in-differences design. Tier 2 is for awardees for which we cannot identify a credible comparison group but for which we would still expect to obtain administrative data and a sample size that would be adequate to detect impacts of the size expected by the awardees for at least one core measure. Tier 3 means that we do not expect to obtain administrative data or we anticipate that the sample size will be inadequate for all of the core measures. Our assignments of awardees to evaluability tiers are based on several key assumptions and are subject to change as we learn more about each program. In some cases, low enrollment, limited data availability, or challenges in identifying a credible comparison group may cause us to change the tier assignment or prevent us from estimating the proposed design.

TBD = to be determined.

For the six Tier 3 awardees, the strategy depends upon the reason why the awardee is classified as Tier 3. In three cases, we will proceed with a difference-in-differences analysis because the only issue is that we may not have sufficient power for at least one core outcome. Although the likelihood of detecting significant effects may appear low at this point, it could turn out that true effect sizes are greater than awardees forecasted or that enrollment is higher than we expect. For the other awardees for which we may not have timely access to Medicaid claims data, it may be necessary to conduct a descriptive evaluation that entails neither the use of administrative data nor a comparison group. In these situations, we will consider additional options, such as using awardee-collected program data, EMR data, or survey data.

For the seven awardees in the TBD category, we have identified barriers that may be overcome during the evaluation period. For example, we may determine that we have sufficient statistical power and can identify a credible comparison group for the rehab arm of the Mount Sinai program. In some cases, it will be necessary to get a comparison group from different market areas, to define the treatment and comparison groups somewhat differently than the awardees defined enrollment or participation, or to conduct a pre-post analysis without a comparison group. In other cases, we may not be able to overcome one or more barriers. We are pursuing the additional information needed to determine the best approach to the evaluation of these seven awardees.

As mentioned, however, it is important to emphasize that we made our assignments of awardees to evaluability tiers relatively early in the implementation process based on several key assumptions about future progress. We will continue to reassess the evaluability of each program, including program enrollment and the availability of administrative data for awardees in Tier 3 and the TBD group. As a result, we are likely to reassign awardees to other tiers as we learn more about each program and as awardees gain more implementation experience, and will conduct the most rigorous impact evaluation for each awardee as possible given the limitations we face.

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VI. NEXT STEPS

A. Implementation evaluation

During the first year of the evaluation, our work focused on describing awardees' early implementation experiences. During the second year, we will build on our understanding of awardees' operations and experiences to examine in greater detail the specific operational strategies that awardees are using as well as the effectiveness of those strategies. Such strategies may include the following:

- To boost provider recruitment and patient enrollment and move programs closer to their enrollment goals and evaluability
- To identify participants who are most likely to benefit from intervention services and to engage them in self-management of their health care
- To train and engage teams of providers in new ways of delivering and managing care for high-risk patients or patients with special needs
- To improve the communication and coordination among the many providers involved in the treatment of high-risk or special needs patients
- To implement the individual components of service delivery models, including (if applicable) the use of health IT to improve care
- To develop and implement payment models that awardees intend to use to help cover the cost of intervention services after the end of the award
- To self-monitor program performance and make real-time quality improvements in program design and operations

In addition to providing detailed information on each awardee's operational activities through the second year of the HCIA R2 award, we will continue to examine the changes that awardees have made to their original service delivery and payment models, the reasons for those changes, and the anticipated effect on program outcomes. Building on previous work, we will also continue to identify the internal and external factors that have facilitated or impeded the successful implementation of these operational strategies and approaches. Finally, we will examine in greater detail than before how these operational strategies—as well as their facilitators and challenges—differ across intervention models, program settings, and target populations. These implementation assessments, along with program impact estimates, will help us to identify the models with the greatest potential to be sustained or scaled up.

Similar to the first year of the evaluation, we will continue to monitor awardees' quarterly self-reports, which are submitted to the implementation and monitoring contractor. We also will conduct semi-structured interviews with awardee leaders, frontline staff, and key stakeholders, such as advisory committee members or organizational partners. For most awardees, we will conduct these interviews through virtual site visits via audio conferences or webinars. However,

we will conduct in-person site visits with awardees that we could not visit in person during the first year of the evaluation contract. These include New York City Health and Hospitals and Mt. Sinai. These interviews will be timed to coincide generally with the end of the second year of the awards. We will include the results of our analyses in the next annual reports.

B. Impact evaluation

In the next annual report, we will present baseline characteristics for all awardees that have at least 50 intervention group beneficiaries with Medicare FFS eligibility. We will need to have a memorandum of understanding, business associate agreement, and a finder file from the awardee to conduct this analysis.) In addition, we will present baseline characteristics for awardees with at least 50 Medicaid FFS enrollees in the intervention group—as long as we have access to claims and eligibility data for the Medicaid FFS payer types. For example, we fully expect to be able to provide baseline characteristics for Medicaid FFS and managed care beneficiaries participating in the seven New York state-based HCIA R2 programs because we have a signed data use agreement with the state.

During the upcoming year, we also expect to draw comparison groups for awardees that have begun providing program services to at least 300 beneficiaries (by payer type) and for whom we have claims and eligibility data. For these awardees, we will present comparison group baseline characteristics and statistical control process charts for the intervention and comparison groups for the four CMMI core measures: (1) total Medicare and Medicaid expenditures, (2) rate of all-cause hospitalizations, (3) rate of ED visits that do not lead to a hospitalization, and (4) rate of 30-day unplanned hospital readmissions. We will also present other key outcomes as applicable for each awardee's goals and objectives. In the next annual report, we will report frequentist and Bayesian regression-adjusted impact estimates for those awardees for whom either the total sample size (that is, intervention and comparison groups combined) or a subgroup sample size will be sufficient to detect effect sizes that are 20 percent of the mean value or larger. We will report findings from robustness tests conducted to confirm the findings.

Using information from interviews with key awardee informants and from awardee-provided finder files on the number and mix of enrollees, as well as the intervention groups' baseline statistics, we will re-estimate MDEs and reassess the evaluability of programs for which we currently are not certain that we can conduct a rigorous difference-in-differences impact analysis. We will update the evaluability assessments for all awardees over the upcoming year to reflect new information and new assessments of evaluability. If an awardee's low rate of recruitment or other factors prevent a rigorous difference-in-differences impact analysis, we will propose an alternative evaluation or estimation approach. We will also critically examine data that the awardees are collecting and using in their self-monitoring activities (as well as other sources of awardee data such as EMR data) for use in our evaluation and update the evaluability assessments with information on the usability of that data source and our approach to using it.

A key goal of the evaluation is to understand which awardee interventions show promise as models that can be sustained beyond the initial funding period and expanded to other populations (that is, scaled up) within the current funding period and beyond. To gauge the potential for such

expansion, we will assess information gathered through various parts of the project on the topics of scalability and sustainability.

We will also initiate our meta-analysis of the qualitative information in Year 2. We will systematically code intervention components, context, implementation characteristics, and outcomes in order to compare the performance of different approaches for specific subpopulations and in specific conditions and settings, and to identify the features within each group and setting that are key to achieving program goals.

C. Surveys

In the second project year, our survey activities will primarily center on clinician and staff surveys. First, we will finalize our pre-testing of and field the staff survey. The staff survey will focus on the experiences of the non-clinician workforce that is implementing the intervention or providing care or services to enrolled or participating patients. Examples of staff to be surveyed include registered nurses, care coordinators, health coaches, social workers, paramedics, pharmacists, dental hygienists, IT staff, and practice administrators.

The staff survey will enable us to collect information from a larger group of intervention staff than can be interviewed during site visits. We will use the data collected through the staff survey to do the following:

- Understand roles and responsibilities within the programs
- Learn about the effects of the intervention on staff's daily work
- Assess staff perceptions of program implementation
- Assess staff perceptions of program effects

We will collect contact information from each of the awardees for the staff whom we will survey in spring 2016. We will field the staff survey for 16 weeks, beginning in July 2016. For awardees with too few staff to participate in the survey (fewer than 25 potential respondents), we will work with the implementation team to ensure that key survey domains are included in the summer 2016 semi-structured interviews. Preliminary results from the staff survey will be included in the next annual report.

Second, during the coming year, we will develop and pre-test the clinician survey, as well as gather clinician contact information from each of the awardees. The clinician survey will include physicians and psychiatrists, dentists, nurse-practitioners, and physician assistants. It will be fielded in March 2017. The goal of the clinician survey is to understand the experiences of clinicians and their perceptions of the effect of the intervention on their patients or participants. The survey will focus on the following domains:

- Implementation process
- Effect of the intervention on how care is delivered

- Selection issues (for example, how clinicians decide which patients to refer to the program, if applicable)
- Perceptions of the effect of the program on patients
- Clinician and practice characteristics

Finally, we will develop and pre-test the patient survey to assess patient experiences with the intervention and their perceptions of its effect on their care in the fourth quarter of 2016. It is too early to provide additional detail on the patient survey. It will be fielded in May 2017.

APPENDIX A:
SUPPLEMENTAL TABLES

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Table A.1. Characteristics of HCIA R2 programs: type of program and implementing organization

Awardee	Type of program				Intervention focus		Type of implementing organization(s)										
	Provider-based	Community-based	Home-based	Virtual	Individual	Provider	Primary care clinic	Hospital	Specialty care clinic	Long-term care clinic	Community-based org.	Dental clinic	School-based clinic	Emergency Services	Behavioral health clinic	Pharmacy	Short-term respite
AAMC	X					X	X	X									
ACCF	X				X	X	X	X	X								
Altarum	X	X				X	X					X					
Amerigroup		X	X		X						X						
Avera	X				X	X				X							
BMC	X				X				X								
Clifford Beers	X	X			X										X		
CCC	X	X			X	X				X							
CCNC		X			X	X										X	
CHIIC	X				X		X	X									
CHS	X	X			X								X				
Columbia	X	X	X	X	X						X	X					
DMC	X				X		X	X									
FPHNY	X			X	X		X		X								
Four Seasons	X	X	X	X	X			X	X	X							
GWU			X	X	X		X	X	X		X						
Hopkins			X		X					X	X						
Icahn			X		X			X									
Mesa		X	X		X									X			
Montefiore	X			X	X		X										
NACHRI	X				X	X	X	X	X								
NHCHC		X			X												X
NM	X		X	X	X		X	X									
North Shore			X		X	X		X									
NYCH+H	X				X			X									
SCH	X				X	X	X	X									
U KS	X	X	X		X	X	X	X									
U NC	X	X			X	X	X		X								
UCSD	X				X		X										
UCSF				X	X		X	X	X								
UHCMC	X				X			X	X								

Table A.1 (continued)

Awardee	Type of program				Intervention focus		Type of implementing organization(s)										
	Provider-based	Community-based	Home-based	Virtual	Individual	Provider	Primary care clinic	Hospital	Specialty care clinic	Long-term care clinic	Community-based org.	Dental clinic	School-based clinic	Emergency Services	Behavioral health clinic	Pharmacy	Short-term respite
UIC	X	X	X	X	X		X						X				
UMich	X				X	X		X									
UNM	X				X			X									
Ventura	X	X	X		X		X	X	X								
VillageCare ^a				X	X												
Wash U	X				X				X								
WI DHS	X				X			X	X								
Yale			X		X									X			
Total	28	14	13	9	37	12	17	19	12	4	4	2	2	2	1	1	1

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

^aVillageCare has a virtual program, so there are no implementing sites, and services are delivered through an integrated mobile platform and mobile application.

Table A.2. Characteristics of HCIA R2 awardees: market characteristics and prior experience

	Market region				Market area			Prior experience			
	Local	Regional within state	Statewide	Multistate	Urban	Suburban	Rural	Pilot test	Similar program	Content experience only	Uncertain ^a
Awardee											
AAMC				X	X	X	X	X			
ACCF				X	X	X	X			X	
Altarum			X		X	X	X		X		
Amerigroup		X			X	X	X			X	
Avera				X	X	X	X		X		
BMC		X			X						X
Clifford Beers	X				X					X	
CCC		X			X	X		X	X		
CCNC			X		X	X	X	X			
CHIIC				X			X		X		
CHS	X				X			X			
Columbia	X				X			X			
DMC	X				X					X	
FPHNY	X				X			X			
Four Seasons		X			X	X	X		X		
GWU	X				X			X			
Hopkins		X			X	X		X			
Icahn	X				X				X		
Mesa	X				X	X		X			
Montefiore	X				X				X		
NACHRI				X	X	X	X	X	X		
NHCHC				X	X				X		
NM	X				X					X	
North Shore	X				X	X		X			
NYCH+H	X				X			X	X		
SCH	X				X	X			X		
U KS		X					X			X	
U NC		X			X	X	X			X	
UCSD	X				X	X			X		
UCSF				X	X	X	X			X	
UHCMC		X			X	X					X
UIC	X				X				X		
UMich			X		X	X			X		
UNM			X				X		X		

Table A.2 (continued)

Awardee	Market region				Market area			Prior experience			
	Local	Regional within state	Statewide	Multistate	Urban	Suburban	Rural	Pilot test	Similar program	Content experience only	Uncertain ^a
Ventura	X				X	X					X
VillageCare	X				X					X	
Wash U	X				X			X			
WI DHS				X	X	X	X		X		
Yale	X				X			X			
Total	19	8	4	8	36	21	14	14	16	9	3

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: For market area and prior experience, awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

^aInformation on prior experience was volunteered in discussions with awardee and program staff or was derived from review of program documents and was available for the majority of awardees. The uncertain category refers to awardees for which the level of prior experience was not reported in discussions or provided in program documents.

Table A.3. Characteristics of HCIA R2 programs: location and number of implementing sites

Awardee	States with implementing sites	Number of implementing sites
AAMC	CA, IA, NH, VA, WI	5
ACCF	FL, WI	9
Altarum ^a	MI	15
Amerigroup	GA	2
Avera	IA, MN, NE, SD	30
BMC	MA	2
Clifford Beers ^b	CT	1
CCC	MN	10
CCNC	NC	225
CHIIC	IA, NE	73
CHS	FL	1
Columbia	NY	5
DMC	MI	3
FPHNY	NY	13
Four Seasons	NC, SC	4
GWU	DC	8
Hopkins	MD	2
Icahn	NY	1
Mesa	AZ	4
Montefiore	NY	7
NACHRI	CA, CO, DC, FL, MO, OH, PA, TX	10
NHCHC	AZ, CT, MN, OR, WA	5
NM	NE	5
North Shore	NY	13
NYCH+H	NY	6
SCH	WA	1
U KS	KS	14
U NC	NC	23
UCSD	CA	9
UCSF ^d	CA, IA, NE	2
UHCMC	OH	6
UIC	IL	40
UMich	MI	40
UNM	NM	3
Ventura	CA	43
VillageCare ^c	NY	0
Wash U	MO	1
WI DHS	WI	2
Yale	CT	1

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

Table A.3 (*continued*)

^aBecause Altarum is in the process of recruiting and training primary care practices to carry out the primary component of its program, the number of implementing site is still to be determined. As of the end of Year 1, 15 sites were implementing the primary component.

^b Clifford Beers is partnering with a local hospital and a community health center for referrals to its Wraparound New Haven program, but program services are delivered in the community or at individual homes so the hospital and community health center are not considered implementing sites

^cVillageCare has a virtual program, so there are no implementing sites, and services are delivered through an integrated mobile platform and mobile application.

^dUCSF's program is implemented telephonically, and participants usually speak to the care team navigators from their homes. This arrangement accounts for the fact that the program has two implementation sites across three states.

Table A.4. Characteristics of HCIA R2 programs: target population by payer, age, and condition

	Payer						Age		Target conditions										
	Medicaid	Medicare	Duals only	Privately insured	Uninsured	CHIP	Adult/Elderly	Youth	Chronic conditions	Cardiovascular & respiratory	Diabetes	Mental and behavioral health	HIV, hepatitis C, and STIs	Kidney disease	Dementia	Oral health	Cancer	Acute conditions	None ^a
Awardee																			
AAMC	X	X					X												X
ACCF		X					X		X	X									
Altarum	X					X		X								X			X
Amerigroup	X							X				X							X
Avera	X	X					X												X
BMC	X			X	X			X	X	X		X		X					
Clifford Beers	X						X	X	X	X	X	X							
CCC	X	X					X												X
CCNC	X	X				X	X	X	X	X	X	X	X	X	X		X		
CHIIC	X	X		X	X		X		X	X	X								
CHS	X				X	X	X	X											X
Columbia	X							X								X		X	
DMC	X						X	X	X	X	X	X	X						
FPHNY	X	X					X		X				X						
Four Seasons	X	X		X			X		X	X					X		X		
GWU	X	X					X		X				X						
Hopkins			X				X		X			X			X				
Icahn	X	X					X		X	X	X							X	
Mesa	X	X		X	X	X	X	X	X	X	X	X						X	
Montefiore	X	X		X		X	X	X	X			X							
NACHRI	X							X	X										
NHCHC	X	X			X		X											X	
NM	X	X		X	X		X		X	X	X							X	
North Shore	X	X					X		X					X					
NYCH+H	X	X		X	X		X		X									X	
SCH	X							X	X										
U KS	X	X		X			X		X	X								X	
U NC	X	X					X											X	
UCSD	X	X					X		X	X	X							X	
UCSF		X					X		X			X			X				
UHCMC	X	X					X		X								X		

Table A.4 (continued)

Awardee	Payer						Age		Target conditions										
	Medicaid	Medicare	Duals only	Privately insured	Uninsured	CHIP	Adult/Elderly	Youth	Chronic conditions	Cardiovascular & respiratory	Diabetes	Mental and behavioral health	HIV, hepatitis C, and STIs	Kidney disease	Dementia	Oral health	Cancer	Acute conditions	None ^a
UIC	X					X		X	X	X	X	X		X		X			
UMich		X		X			X											X	
UNM	X	X					X											X	
Ventura	X	X					X		X	X									
VillageCare	X	X					X		X				X						
Wash U	X			X	X		X	X											X
WI DHS	X					X		X	X										
Yale		X					X												X
Total	34	26	1	10	8	7	31	15	26	14	9	10	5	4	4	3	3	11	8

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

^aThe designation of "none" under target conditions refers to programs that target types of care (such as behavioral health or oral health) or that target population health as opposed to targeting certain chronic or acute conditions.

Table A.5. Characteristics of HCIA R2 service delivery models

Awardees	Care management/ care coordination						Counseling and health education					Practice transformation	Health IT	Direct care provision	Tele-medicine	Pharmacy intervention
	Care management	Outpatient care coordination	Transitional care coordination	Integrated care	Medical home	Home care	Patient and family engagement	Patient navigation	Shared decision making	Education and training	Facilitated consultation	Evidence-based/ clinical practice guidelines	Quality improvement/ process redesign			
AAMC		X												X		
ACCF									X					X		
Altarum							X			X				X		
Amerigroup	X	X					X									
Avera			X										X		X	
BMC		X												X		
CCC			X				X			X			X			
CCNC	X			X									X	X		X
CHIC	X										X		X	X		
CHS								X							X	
Clifford Beers	X			X			X							X	X	
Columbia							X							X		
DMC					X					X						
FPHNY		X		X											X	
Four Seasons				X						X						
GWU	X						X							X		
Hopkins	X						X							X		
Icahn		X	X			X	X		X					X		
Mesa			X								X		X		X	
Montefiore				X										X		X
NACHRI	X	X			X					X						
NHCHC	X		X				X									
NM	X					X	X								X	
North Shore	X								X							
NYCH+H	X		X													
SCH	X	X								X		X				
U KS	X		X	X	X	X	X			X		X		X		X
U NC	X								X			X		X		
UCSD	X						X									
UCSF		X					X	X						X		X

Table A.5 (continued)

Awardees	Care management/ care coordination						Counseling and health education					Practice transformation	Health IT	Direct care provision	Tele-medicine	Pharmacy intervention	
	Care management	Outpatient care coordination	Transitional care coordination	Integrated care	Medical home	Home care	Patient and family engagement	Patient navigation	Shared decision making	Education and training	Facilitated consultation	Evidence-based/ clinical practice guidelines	Quality improvement/ process redesign				
UHCMC	X													X	X		X
UIC		X												X	X	X	
UMich							X						X	X			
UNM																X	
Ventura					X		X										
VillageCare							X							X			
Wash U							X	X							X		
WI DHS	X	X	X				X	X									
Yale	X																
Total	18	10	8	6	4	3	18	4	4	7	2	3	6	19	6	7	3

Source: Discussions with awardee and program staff during site visits, September–December 2015; review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: All awardees' program components fall into at least one category. Many service delivery models include several components that fall into many categories.

Table A.6. Characteristics of HCIA R2 payment models

Awardee	Shared savings	Fee-for-service	Per capita care management payment	Bundled payment	Value-based purchasing	Other ^a
AAMC	X	X				
ACCF	X			X	X	
Altarum					X	
Amerigroup				X	X	
Avera	X					
BMC			X			
CCC	X					X
CCNC			X		X	
CHIIC	X					
CHS	X					X
Clifford Beers					X	X
Columbia		X				
DMC	X	X				X
FPHNY				X	X	
Four Seasons		X	X	X		
GWU		X				
Hopkins	X		X			X
Icahn	X	X		X		
Mesa	X	X		X		
Montefiore	X				X	X
NACHRI	X	X	X	X	X	
NHCHC			X			
NM	X			X		
North Shore				X	X	
NYCH+H						X
SCH	X	X			X	
U KS		X		X	X	
U NC		X		X	X	
UCSD		X			X	
UCSF		X	X		X	
UHCMC	X		X			
UIC			X			
UMich						X
UNM		X				
Ventura			X	X		
VillageCare			X			
Wash U					X	
WI DHS	X		X			
Yale			X			
Total	16	14	13	12	15	8

Source: Discussions with awardee and program staff during site visits, September–December 2015; review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Many awardees use several reimbursement strategies in their payment models; awardees that use more than one reimbursement strategy are counted in several models.

^a The "other" payment model category includes unique models, such as payment based on implementation or capitated payment for clinical services, that do not fit into one of the above categories.

Table A.7. Design features that influenced the implementation of service delivery models

Awardee	Key design features					
	Adaptability		Perceived relative advantage		Simplicity	
	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier
AAMC			X	X		
ACCF	X					X
Altarum	X					
Amerigroup	X		X			
Avera	X		X	X		
BMC	X		X			X
CCC			X			
CCNC		X	X			X
CHIIC						
CHS	X					
Clifford Beers	X		X			
Columbia	X		X		X	
DMC			X			
FPHNY	X		X			X
Four Seasons			X			
GWU						X
Hopkins	X		X			
Icahn	X					
Mesa			X			X
Montefiore			X		X	
NACHRI	X					X
NHCHC						
NM			X			X
North Shore			X			
NYCH+H						
SCH	X		X			
U KS			X		X	
U NC	X					
UCSD						X
UCSF	X				X	
UHCMC	X		X			X
UIC	X		X			
UMich	X		X		X	
UNM			X			
Ventura	X					
VillageCare	X		X		X	
Wash U			X			
WI DHS	X					
Yale						
Total	21	1	24	2	6	10

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

Table A.8. Process factors that influenced the implementation of service delivery models

Awardee	Key process factors					
	Staff engagement		Participant engagement		Stakeholder engagement	
	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier
AAMC	X					
ACCF	X	X		X		
Altarum	X	X			X	X
Amerigroup	X		X	X		X
Avera	X	X	X		X	
BMC	X					
CCC	X	X	X			
CCNC	X	X			X	
CHIIC		X	X			
CHS				X	X	X
Clifford Beers	X	X	X			X
Columbia	X	X	X		X	X
DMC	X					
FPHNY	X			X	X	
Four Seasons	X	X			X	
GWU		X		X	X	
Hopkins	X			X		
Icahn			X	X	X	
Mesa	X	X		X	X	
Montefiore	X	X	X	X		
NACHRI	X	X				X
NHCHC		X				
NM	X		X		X	
North Shore	X				X	
NYCH+H	X	X				
SCH					X	X
U KS	X	X			X	
U NC	X	X	X			
UCSD	X	X	X			
UCSF						X
UHCMC	X	X	X			
UIC	X	X				X
UMich	X	X	X		X	
UNM	X					
Ventura	X	X	X			X
VillageCare	X	X	X	X	X	
Wash U	X	X	X			
WI DHS	X	X	X		X	
Yale		X		X	X	
Total	31	26	17	11	18	10

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

Table A.9. Inner setting characteristics that influenced the implementation of service delivery models

Awardee	Inner setting characteristics							
	Team characteristics		Organization leadership		Prior experience		Health IT	
	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier
AAMC	X		X	X	X		X	
ACCF			X	X	X			X
Altarum	X				X			X
Amerigroup	X		X					
Avera				X	X		X	X
BMC	X						X	X
CCC	X			X	X		X	X
CCNC	X		X		X			X
CHIIC	X		X		X		X	X
CHS	X		X		X			
Clifford Beers	X					X	X	
Columbia	X	X	X		X			X
DMC	X		X					
FPHNY	X		X		X		X	
Four Seasons			X		X			X
GWU					X			X
Hopkins	X				X		X	
Icahn	X				X			X
Mesa					X			X
Montefiore	X		X		X		X	X
NACHRI	X		X		X			X
NHCHC			X					
NM		X	X				X	
North Shore	X		X		X			X
NYCH+H	X	X			X			X
SCH	X		X		X		X	X
U KS	X							X
U NC	X			X				X
UCSD								
UCSF	X							
UHCMC	X		X		X			
UIC		X	X				X	X
UMich					X	X	X	X
UNM					X			
Ventura	X						X	
VillageCare			X					X
Wash U	X		X		X			X
WI DHS	X		X		X			X
Yale	X				X			X
Total	27	4	21	5	26	2	14	25

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

Table A.10. Environmental factors that influenced the implementation of service delivery models

Awardee	Key environmental factors			
	Participant characteristics		Health care system	
	Facilitator	Barrier	Facilitator	Barrier
AAMC				
ACCF		X		
Altarum		X	X	X
Amerigroup		X		
Avera			X	
BMC		X		
CCC				
CCNC				
CHIIC		X		
CHS		X		X
Clifford Beers		X		
Columbia		X		
DMC		X		X
FPHNY		X		X
Four Seasons				
GWU		X		
Hopkins				
Icahn				
Mesa				
Montefiore		X		
NACHRI		X	X	X
NHCHC		X		
NM		X	X	X
North Shore				X
NYCH+H		X		
SCH		X		
U KS				X
U NC				
UCSD		X		
UCSF				
UHCMC		X		
UIC		X		X
UMich		X		
UNM				
Ventura				
VillageCare		X		
Wash U		X		X
WI DHS		X		X
Yale				
Total	0	24	4	11

Source: Discussions with awardee and program staff during site visits, September–December 2015, and review of awardees' self-reported fourth-quarter program narratives, through August 31, 2015.

Note: Awardees can be counted in more than one category. The counts are probable under-estimates because they are based on information volunteered in discussions with awardee and program staff, and they were reported in each awardee's program narrative. The counts were not derived from "yes-no" responses to questions about specific actions or features.

Table A.11. Evaluability criteria required to assess program impacts, by awardee

Criterion		AAMC	ACCF	Altarum	Amerigroup	Avera	BMC	CCC	CCNC	CHIIC	CHS	Clifford Beers	Columbia	DMC
No major barriers to implementation		Yes	Yes, qualified	Yes	Yes, qualified	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes, qualified	Yes
Program expected to improve one or more outcomes within three years		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can identify treatment group in the post-period (all 3 years)		Yes	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes, qualified; for individuals who transition out of foster care, this requires linking Medicaid identifications through a crosswalk	Yes	Yes	Yes	Yes	Yes	No; unable to identify timely source of Medicaid data, and there are too few Medicare participants	Yes	Yes	Yes
Can identify treatment group in the pre-period	1 year	Yes	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
	2 years	Yes	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes	Yes	Yes	Yes	No; pre-period limited to 18 months due to data availability	Yes	No	Yes	Yes	Yes
Outcomes available for treatment group		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Can identify credible control group	Replicate eligibility criteria	Yes	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes	Yes	Yes, qualified; selection partially based on criteria not available in claims data	Yes	Yes, qualified; Medicare patients will be restricted to those with Part D	Yes	No	Yes	Uncertain; need to establish claims-based eligibility criteria	Yes, qualified; selection partially based on criteria not available in claims data

Table A.11 (continued)

Criterion	AAMC	ACCF	Altarum	Amerigroup	Avera	BMC	CCC	CCNC	CHIIC	CHS	Clifford Beers	Columbia	DMC
Subject to same local influences	No; comparison geographic area likely in another state	Yes, qualified (Florida sites); no (Wisconsin sites)	Yes, qualified; comparison area in another region of the state	No; comparison geographic area likely in another state	Uncertain; comparison geographic area may be in another state	Yes	Yes	Yes	Yes	No	Yes, qualified; comparison area in another county in the state	Yes, qualified; comparison area in other parts of New York City	Yes, qualified; comparison geographic area may be in another region of the state
Defined in pre- and post-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Data from same source as treatment group	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Outcomes available for control group	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Statistical power to detect effects sufficient for at least one core outcome	Yes	Core outcome: yes, qualified; awardee-specified outcome: Yes	Yes	Yes, qualified; likely sufficient for binary measure only, not continuous	Yes	No	Yes	Yes	Yes	No	Yes	Core outcome: no; awardee-specified outcome: Yes	Yes
Proposed design	DD, cross-section	DD, cross-section	DD, panel	TBD, possibly DD with panel	DD, cross-section	Monitor enrollment and data availability	DD, panel	DD, panel	DD, cross-section	Monitor Medicaid data availability	DD, panel	TBD, possibly DD with panel	DD, panel
Unit of observation for propensity score matching	Academic medical centers	Practices	Providers	Patients	Skilled nursing facilities and nursing facilities	Patients	Skilled nursing facilities	Pharmacies	Critical access hospitals	N/A	Patients	Patients	Patients
Evaluability tier	1	1	1 assuming we obtain Medicaid data in timely fashion	TBD depending on enrollment and data availability	1	3	1	1	1	3	1 assuming we obtain Medicaid data in timely fashion	TBD depending on establishing claims-based eligibility criteria	1
If evaluability tier 1, are we reasonably confident in the analysis, or are there major uncertainties?	Reasonably confident	Uncertain	Uncertain	Not tier 1	Uncertain	Not tier 1	Reasonably confident	Reasonably confident	Reasonably confident	Not tier 1	Reasonably confident	Not tier 1	Reasonably confident

Table A.11 (continued)

Criterion		AAMC	ACCF	Altarum	Amerigroup	Avera	BMC	CCC	CCNC	CHIIC	CHS	Clifford Beers	Columbia	DMC
Payers included in impact analysis	Medicare FFS (includes duals in Medicaid FFS or managed care)	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes
	Medicaid	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
	Other	No	No	Yes, CHIP	No	No	Yes, CHIP	No	Yes, CHIP	No	No	No	No	Yes, CHIP
Awardee expects program to have impact on core outcome	Expenditures	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Admissions	Yes	No	No	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	No
	ED visits	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes
Key awardee-specific outcomes	Readmissions	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No
		Imaging use and expenditures; primary and specialty care visits and expenditures	Use of cardiac imaging and percutaneous coronary intervention	Annual dental visit; rate of restorative procedures; application of dental sealance; referral completion rate	Acquisition of contraceptives; number of different providers seen; likelihood of primary care visit	Follow-up visit after hospitalization	Hospital length of stay, total spending by service type such as inpatient	Hospitalization, ED visits, and readmissions within 90 days of SNF discharge	Medication adherence; prescription drug expenditures; primary care and specialty care visits	Preventable admissions, vaccinations, cancer screening, diabetes care, and diabetes complications	N/A	Measures related to diabetes, cholesterol, medication use, and physician visits	Dental visits; dental procedure rates; Medicaid dental spending	Hospitalizations and ED visits for ACSCs; follow-up visit after discharge

Table A.11 (continued)

Criterion		FPHNY	Four Seasons	GWU	Hopkins	Icahn	Mesa	Montefiore	NACHRI	NHCHC	NM	North Shore	NYCH+H	SCH
No major barriers to implementation		Yes	Yes	Yes	Yes, qualified	No; began enrollment October 2015	Yes	Yes	Yes	Yes, qualified	Yes, qualified	Yes	Yes	Yes
Program expected to improve one or more outcomes within three years		Yes	Yes	Yes	Yes	Uncertain	Yes	Yes	Yes	Yes, qualified; some participants may not complete full intervention	Yes	Yes	Yes	Yes
Can identify treatment group in the post-period (all 3 years)		Yes	Uncertain; need to establish claims-based eligibility criteria	Yes	Yes	Yes	Yes, qualified; we will not have data for the largest population (uninsured)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can identify treatment group in the pre-period	1 year	Yes	Uncertain; need to establish claims-based eligibility criteria	Yes	Yes	Yes	Yes, qualified; need to gather detailed information about eligibility criteria	Yes	Yes	Yes	Yes	Yes	Yes	Uncertain; depends on source of Medicaid data
	2 years	Yes	Uncertain; need to establish claims-based eligibility criteria	Yes	Yes	Yes	Yes, qualified; need to gather detailed information about eligibility criteria	Yes	Yes	Yes	Yes	Yes	Yes	Uncertain; depends on source of Medicaid data
Outcomes available for treatment group		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can identify credible control group	Replicate eligibility criteria	Yes	Uncertain; need to establish claims-based eligibility criteria	HIV-positive group: Yes At-risk group: uncertain	Yes, qualified; require diagnosis of dementia in claims	Yes, qualified; selection partially based on criteria not available in claims data	Yes, qualified; need to gather detailed information about eligibility criteria	Yes	Yes	Yes, qualified; depends on use of V diagnosis codes	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes, qualified; selection partially based on criteria not available in claims data	Yes	Yes, qualified; selection partially based on criteria not available in claims data

Table A.11 (continued)

Criterion	FPHNY	Four Seasons	GWU	Hopkins	Icahn	Mesa	Montefiore	NACHRI	NHCHC	NM	North Shore	NYCH+H	SCH
Subject to same local influences	Yes	No; comparison geographic area likely in another state	Yes	Yes	Yes	Yes, qualified; comparison geographic area may be in another region of the state	Yes	Yes	Yes, qualified; comparison geographic area may be in another region of the state	Yes	Yes	Yes	Yes, qualified; comparison area in another county in the state
Defined in pre- and post-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes, qualified; depends on use of V diagnosis codes	Yes	Yes	Yes	Yes
Data from same source as treatment group	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Uncertain; depends on source of Medicaid data	Yes	Yes	Yes	Yes	Uncertain; depends on source of Medicaid data
Outcomes available for control group	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Statistical power to detect effects sufficient for at least one core outcome	Yes	Yes	Yes	Core outcome: Uncertain; awardee-specified outcome: Yes	Uncertain	Yes	Yes	Yes	Yes, qualified; depends on establishing claims-based eligibility criteria and data availability	Yes	Yes	Yes	Yes
Proposed design	DD, panel	TBD, possible DD with cross-section	DD, panel	DD, panel	TBD, possibly DD with panel	DD, cross-section	DD, panel	DD, panel	TBD, DD or pre-post treatment only	DD, cross-section	DD, panel	DD, panel	DD, panel
Unit of observation for propensity score matching	Patients	Patients	Patients	Patients	Patients	Patients	Patients	Patients	Patients	Patients	Patients	Patients	Patients
Evaluability tier	1	TBD depending on establishing claims-based eligibility criteria	1, assuming we obtain Medicaid data in a timely fashion	3	TBD depending on implementation	1	1	1 assuming we obtain Medicaid data in timely fashion	TBD depending on depends on establishing claims-based eligibility criteria and data availability	1	1	1	1 assuming we obtain Medicaid data in timely fashion

Table A.11 (continued)

Criterion		FPHNY	Four Seasons	GWU	Hopkins	Icahn	Mesa	Montefiore	NACHRI	NHCHC	NM	North Shore	NYCH+H	SCH
If evaluability tier 1, are we reasonably confident in the analysis, or are there major uncertainties?		Reasonably confident	Not tier 1	Reasonably confident for HIV positive group; uncertain for at-risk group	N/A	Not tier 1	Uncertain	Reasonably confident	Uncertain	N/A	Uncertain	Reasonably confident	Reasonably confident	Uncertain
Payers included in impact analysis	Medicare FFS (includes duals in Medicaid FFS or managed care)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Uncertain	Yes	Yes	Yes	No
	Medicaid	Yes	No	Yes	Yes	No	Uncertain	Yes	Yes	Yes	No	Yes	Yes	Yes
	Other	No	No	No	No	No	No	No	No	No	No	No	No	No
Awardee expects program to have impact on core outcome	Expenditures	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Admissions	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ED visits	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Readmissions	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Key awardee-specific outcomes		Cirrhosis of liver; hepatocellular carcinoma; HCV-related prescriptions	Hospice use, in-hospital death, use of ICU/CCU	Preventable admissions; follow-up visit after discharge; STI treatment and testing	Nursing home placement	Length of stay, follow-up visit after hospitalization	Ambulance use; expenditures for ED, ambulance, and physician extenders	Measures of behavioral and physical health	Spending by service type such as inpatient; length of stay	Length of stay; primary care visits; influenza vaccination; tobacco cessation intervention	Diabetes care: eye exam, foot exam	Influenza vaccine rate, pneumococcal vaccine rate, modality mix	Mortality, readmission for ACSCs	Length of stay, ambulatory sensitive ED visits

Table A.11 (continued)

Criterion		U KS	U NC	UCSD	UCSF	UHMC	UIC	UMich	UNM	Ventura	Village Care	Wash U	WI DHS	Yale
No major barriers to implementation		Yes	Yes, qualified	Yes, qualified	Yes, qualified	Yes	Yes	Yes, qualified	Yes, qualified	Yes	Yes	Yes	Yes	Yes, qualified
Program expected to improve one or more outcomes within three years		Yes	Yes	Yes, qualified; implementation and data delays affect how long participants are followed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes, qualified; current program may not improve outcomes over previous program	Yes	Yes
Can identify treatment group in the post-period (all 3 years)		Yes, qualified; selection partially based on criteria not available in claims data	Yes	Yes, qualified; need to establish claims-based eligibility criteria	Yes	Yes	Yes	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes	Yes	Yes	Yes	Yes
Can identify treatment group in the pre-period	1 year	Yes, qualified; selection partially based on criteria not available in claims data	Yes	Yes	Yes	Yes	Uncertain	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes	Yes	No	Yes	Yes
	2 years	Yes, qualified; selection partially based on criteria not available in claims data	Yes	Yes, qualified; may not be available for Medicare Advantage patients	Yes	Yes	Uncertain	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes	Yes	No	Yes	Yes
Outcomes available for treatment group		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes, qualified; will use an estimate of the cost of an unintended birth	Yes	Yes
Can identify credible control group	Replicate eligibility criteria	Yes, qualified; selection partially based on criteria not available in claims data	Yes	Yes, qualified; need to establish claims-based eligibility criteria	Yes	Yes	Yes	Yes, qualified; will expand beyond enrollment criteria to select wider group	Yes	Yes, qualified; selection partially based on criteria not available in claims data	Yes	No	Yes, qualified; selection partially based on criteria not available in claims data	Yes, qualified; selection partially based on criteria not available in claims data

Table A.11 (continued)

Criterion	U KS	U NC	UCSD	UCSF	UHMC	UIC	UMich	UNM	Ventura	Village Care	Wash U	WI DHS	Yale
Subject to same local influences	Yes, qualified; comparison geographic area is in another region of the state	Yes, qualified; comparison geographic area is in another region of the state	Yes, qualified; comparison geographic area will be in another region of the state	Yes	Yes, qualified; comparison geographic area is in another region of the state	Uncertain; depends which comparison group strategy is chosen	Uncertain; comparison geographic area may be in another state	Yes, qualified; year 3 comparison geographic area may be in another state	Yes	Yes	Yes, qualified; comparison survey data will be drawn from other regions	Yes, qualified; comparison area in other areas in the state	Yes, qualified; comparison geographic area will be in another region of the state
Defined in pre- and post-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data from same source as treatment group	Yes	Yes	Yes	Yes	Yes	Uncertain; depends which comparison group strategy is chosen	Yes	Yes	Yes	Yes	Yes, qualified; survey data available but not awarder-provided data	Uncertain; depends on source of Medicaid data	Yes
Outcomes available for control group	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes, qualified; proxy cost measures using encounter data	Yes, qualified; proxy cost measures using encounter data	Yes	Yes, qualified; publicly-available survey data and estimated cost of an unintended birth	Yes	Yes
Statistical power to detect effects sufficient for at least one core outcome	Core outcome: Uncertain; awarder-specified outcome: Yes	Core outcome: Uncertain; awarder-specified outcome: Yes	Uncertain (depends on enrollment)	Yes, qualified: likelihood of ED of or hospitalization, but not count of ED or hospitalizations	Yes	Yes	Uncertain; depends on enrollment at other hospitals	Yes	Yes	Yes	No	Yes	Yes
Proposed design	DD, cross-section	DD, panel	TBD, possibly DD	Multivariate regression post-only	DD, panel	TBD, possibly DD with panel	DD, panel	DD, cross-section	DD, panel	DD, panel	Comparison of survey responses over time	DD, panel	DD, panel
Unit of observation for propensity score matching	N/A	Practices	Patients	N/A, randomized controlled trial	Patients	Patients	Practices	Emergency departments	Patients	Patients	N/A	Patients	Patients
Evaluability tier	3	3	TBD depending on establishing claims-based eligibility criteria and enrollment	1	1	TBD, depending on ability to identify credible comparison group and obtain data	1	1, assuming enrollment is sufficient	1	1	3	1 assuming we obtain Medicaid data in timely fashion	1

Table A.11 (continued)

Criterion		U KS	U NC	UCSD	UCSF	UHCMC	UIC	UMich	UNM	Ventura	Village Care	Wash U	WI DHS	Yale
If evaluability tier 1, are we reasonably confident in the analysis, or are there major uncertainties?		Not tier 1	Not tier 1	N/A	Reasonably confident	Reasonably confident	Not tier 1	Uncertain	Uncertain	Reasonably confident	Reasonably confident	N/A	Uncertain	Reasonably confident
Payers included in impact analysis	Medicare FFS (includes duals in Medicaid FFS or managed care)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes
	Medicaid	No	No	Yes	Uncertain	Yes	Yes	No	Uncertain	Yes	Yes	Yes	Yes	Uncertain
	Other	No	No	Uncertain, may include Medicare Advantage	Uncertain, may include Medicare Advantage	No	No	No	No	No	No	Yes, private payer, uninsured, and Title X	Yes, CHIP	Uncertain, may include Medicare Advantage
Awardee expects program to have impact on core outcome	Expenditures	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Admissions	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes
	ED visits	No	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	Yes
Key awardee-specific outcomes	Readmissions	No	No	No	No	Yes	No	Yes	Yes	Yes	No	No	Yes	No
		Rate of heart attack and stroke; death within 90 days of discharge; quality of care measures (e.g., care transition)	Outpatient visits for low back pain and use of imaging, surgery and injections	Major cardiovascular event rate; mortality rate	Expenditures by type of service; quality of life; caregiver burden and self-efficacy	Use of care at the end of life: chemotherapy, ICU, hospice	May include condition-specific admissions and ED visits	Medicare FFS spending per episode of care; mortality; inpatient and outpatient complications; length of stay	Transfer rate; transfer transportation costs; mortality; use of post-acute care; stroke recurrence	Influenza vaccination; pneumonia vaccination	Mortality, HIV-related prescriptions	Long-acting reversible contraception use; unintended pregnancies; unintended births	Follow-up visit after discharge; mortality	Mortality, adverse outcome after ED discharge

^aV codes are used to describe beneficiaries' encounters with circumstances other than disease or injury, including circumstances that can influence a person's health status, such as disease exposures or, in this case, homelessness.

ACSCs = ambulatory care sensitive conditions; CCU = critical care unit; DD = difference in differences; HCV = hepatitis C virus; HIV = human immunodeficiency virus; ICU = intensive care unit; N/A = not applicable; SNF = skilled nursing facility; STI = sexually transmitted infection; TBD = to be determined.

Source: Evaluability assessments completed by Mathematica from October to December 2015.

Note: Our assignments of awardees to evaluability tiers are based on several key assumptions and subject to change as we learn more about each program. In some cases, low enrollment, limited data availability, or challenges identifying a credible comparison group may cause us to change the tier assignment or prevent us from estimating the proposed design.

APPENDIX B:

INDIVIDUAL Awardee PROGRAM NARRATIVES

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APPENDIX B.1

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

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REPORT

APPENDIX B.1

HCIA Round Two Evaluation: Association of American Medical Colleges

August, 2016

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Contract Number: CMMI-500-2014-00034I

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FINDINGS AT A GLANCE (September 1, 2014–November 3, 2015)

Successes

- All five sites are on track to go live with the remainder of their 15 specialty-specific eConsult and eReferral templates by summer 2016.
- The Association of American Medical Colleges has developed a tracking and monitoring system as part of a learning collaborative that supports site-level implementation.

Challenges and strategies to address them

- At one of the sites, sufficient site-level leadership engagement was lacking in the early stages of implementation. To address this, the awardee worked closely with this site to support local leaders and leverage learning from other sites.
- Because of the inability to remove standard pathways for referrals at some sites, primary care physicians (PCP) continued to use the standard referral process instead of the enhanced referrals that were part of this intervention. To address this, three sites required that all participating specialties use the enhanced referral templates. The remaining sites are working to make the enhanced pathway a requirement.

Lessons learned

- The phased approach for launching specialty templates streamlined the implementation process and allowed sites to continually refine workflows and improve the quality of eConsults and eReferrals while adapting them to local needs.
- Use of a common electronic medical record across the participating sites facilitated the sharing of resources and expertise.
- The perceived educational benefits of the Coordinating Optimal Referral Experience program facilitated both specialist and PCP support for the program.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through our site visit on November 3, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2, programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Coordinating Optimal Referral Experiences (CORE) program, which is being implemented by the Association of American Medical Colleges. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation focused on developing a baseline understanding of the Association of American Medical Colleges' CORE program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent visit to three Association of American Medical Colleges implementation sites; and a review of the Association of American Medical Colleges reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the Association of American Medical Colleges' program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of the Association of American Medical Colleges' impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The Association of American Medical Colleges is supporting five large academic medical centers (AMCs) in implementing the CORE program, which is an eConsult and eReferral (eCR) program. The University of California San Francisco Medical Center (UCSF) first designed and piloted this program to reduce long wait times for specialty appointments and to increase the effectiveness of referral processes by improving communication and care coordination between primary care physicians (PCPs) and specialists. The primary targets of the program are PCPs who are introduced to the eCR tools at participating sites. The project's aim is to (1) enhance the PCPs' ability to treat patients by providing guidance and education on conditions requiring specialty input and (2) change PCPs' behavior by providing decision support tools to assess the appropriateness of specialist clinician referrals and ensure that PCPs provide all necessary information to the specialists at the time of referral. The program is targeted at all primary care clinics whose providers are employed by the participating AMCs—including both community-based and AMC-based clinics—provided that those clinics use the EpicCare electronic medical record (made by Epic Systems Corporation). The target patient population is all patients older than 17 years, regardless of payer status, who visit the primary care practice sites. A change in patient behavior—such as a reduction in visits to the emergency department (ED) that are due to poor access to specialists—is an anticipated secondary effect of the project.

The primary goal of the CORE program is improved outpatient care coordination and decision support. The project consists of two components to support these goals: (1) eConsults and (2) eReferrals. An eConsult is an electronic exchange initiated by a PCP who is seeking clinical guidance from a specialist for patients whom the PCP would like to continue to manage. The PCPs use a standardized set of condition- and specialty-specific templates to initiate communication and capture guidance from the specialists. Specialists and primary care physicians at each participating site worked collaboratively to develop the templates to ensure that they would be appropriate for local needs and integrated into each site's workflow. The eConsults are meant to replace some in-person specialist visits. The consulting specialist is expected to respond to the eConsult request within 72 hours. If the consulting specialist feels the situation warrants, he or she can convert an eConsult to an eReferral. After all the necessary information has been completed, the patient would then be scheduled for a visit with the specialist through the eReferral process.

The eReferral specialty-specific templates are designed to be used at the point of referral. They convey guidance on what information to provide to specialists in advance of the referral and assist in assessing whether the referral is appropriate. The templates ask PCPs a series of questions to ensure that the PCP provides all necessary information to the specialist—such as, what is the basic clinical history for the patient's condition and whether the PCP completed certain key diagnostic and laboratory tests. Once the specialist reviews the referral and determines that it is appropriate, an appointment is scheduled for the patient. The participating

sites updated UCSF's standardized eReferral templates to ensure that they provided locally appropriate, referral-related decision support for the various specialties. The hope is that utilizing this tool will lead to a reduction in inappropriate referrals and make initial consultation visits more effective (for example, by reducing the ordering of already completed tests or requiring subsequent specialty visits to review necessary tests that were not complete prior to the initial specialty visit). In addition, the tool provides education to PCPs. By working through the template, PCPs gain a better understanding of which tests and information specialists need before seeing patients.

The CORE program aims to make specialty care more accessible by reducing specialist physician visits for conditions that can be managed with consultation in primary care. The eReferral tool is expected to improve specialist access by ensuring that initial visits to specialists include all of the information needed for initial treatment, eliminating the need for patients to schedule a follow-up appointment for treatment after initial assessment. Use of the tools should thus reduce long waiting periods for specialty appointments because appointment slots that could have been potentially filled are now available. Success of this model hinges on PCP and specialist engagement and voluntary use. The partner AMCs have physician compensation plans that reward productivity. They have agreed to provide relative value unit (RVU) credits to PCPs and subspecialty physicians to incentivize participation. Specialists will receive an RVU credit of 0.5 for the time and effort needed to complete each eConsult. The PCPs will also receive a 0.5 RVU credit for the time and effort expended in initiating the eConsult and for carrying out the specialist's recommendations.¹

The CORE program relies on health information technology (health IT). Both the eConsult and eReferral platforms are embedded in the Epic electronic medical record (EMR) system, which is used by all participating AMCs. However, the versions and features of the Epic EMR vary across participating AMCs. The awardee has supported customization of the eCR tools to match these technical requirements, as well as site-specific variations in workflows.

In the table below, we provide an overview of the Association of American Medical Colleges' CORE program.

¹ RVUs are a measure of physician work often used in systems for paying physicians. See "How Medicare Pays Physicians," *The New York Times*, December 3, 2010. Available at http://economix.blogs.nytimes.com/2010/12/03/how-medicare-pays-physicians/?_r=0.

Table 1. Association of American Medical Colleges: CORE characteristics at a glance

Program characteristic	Description
Purpose	CORE aims to enhance care delivery at the primary care–specialty care interface by providing PCPs with decision support tools that allow them to seek guidance about patient treatment and assess the appropriateness of specialist clinician referrals.
Components	<ul style="list-style-type: none"> • Outpatient care coordination (primary) • Decision support (primary) • Health IT (secondary)
Target population	The primary targets of the program are PCPs, who are introduced to the eConsult and eReferral system at participating sites.
Theory of change/theory of action	Combining improved coordination and communication between PCPs and specialist clinicians with the eConsult interface will lead to a reduction in unnecessary subspecialty referrals, reduced visits to specialist clinicians, and more efficient use of specialist care.
Payment model	Shared savings, fee-for-service
Award amount	\$7,125,770
Launch date ^a	9/1/2014
Setting	PCP, hospital, academic setting
Market area	Rural, urban, suburban
Market location	California, District of Columbia, Illinois, Iowa, New Hampshire, Virginia, Wisconsin
Core outcomes	<ul style="list-style-type: none"> • An increase in patient satisfaction, measured by the Clinician and Group Consumer Assessment of Healthcare Providers and Systems survey • A decrease in emergency department (ED) utilization, measured by ED visit rate • A decrease in cost, measured by a total cost of care, population-based, per member per month index • A decrease in utilization, measured by all-cause inpatient admission rate • A decrease in utilization, measured by referral rate • An increase in quality of eConsults, measured by referral rate • A decrease in cost, measured by diagnostic testing and imaging • An increase in eConsult uptake, measured by eConsult rate • An increase in access, measured by timely access to specialty care • A decrease in cost, measured by costs to patient (estimated)

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by the Association of American Medical Colleges to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee (on May 11, 2015, and June 17, 2015) and during our visits to the implementation sites (in October and November 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four

quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

We conducted in-person visits to three selected implementation sites. We chose sites to visit so that there would be a range in implementation experiences based on when they launched their first wave of specialty templates and their use of the tools at the time of selection. In addition, the location of the chosen sites allowed for a geographical spread across the regions where the Association of American Medical Colleges is implementing this intervention. We selected sites on this basis to ensure that we would gain a broad understanding of potential barriers to and facilitators of implementation of the CORE program (see Table 2).

Table 2. Characteristics of selected Association of American Medical Colleges implementation sites

Site name	Location	Implementation experience	Date of visit
University of California San Diego Medical Center	San Diego, California	Early launch	November 2, 2015
University of Wisconsin Hospital and Clinics	Madison, Wisconsin	Mid launch	October 13, 2015
Rector and Visitors of the University of Virginia	Charlottesville, Virginia	Late launch	November 3, 2015

For each visit, one or both of our implementation team members conducted semi-structured interviews with site-level program staff and frontline users of the tools. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. One of the implementation team members coded program components, research questions, and concepts describing the implementation experiences. We then extracted the coded text pertaining to the research questions and performed analysis to (1) determine how effectively the program was implemented and (2) identify the facilitators of and challenges to using the tools for clinical decision support and shared decision making. Our findings from this analysis are presented in the next section.

C. Findings

1. How effectively has the program been implemented?

During our interviews, the Association of American Medical Colleges' program director and manager informed us that implementation is on track and that all sites are implementing the CORE program as originally designed. All five sites have launched and at the time of our visit were in the final wave of the implementation phase. The Association of American Medical Colleges implemented the CORE program in a series of four waves, with sites introducing a certain number of specialty-specific eConsult and eReferral templates in each wave. This approach allowed sites to continually refine workflows, improve the quality of the eConsults, and build relationships between primary care and specialty physicians in each of the specialty

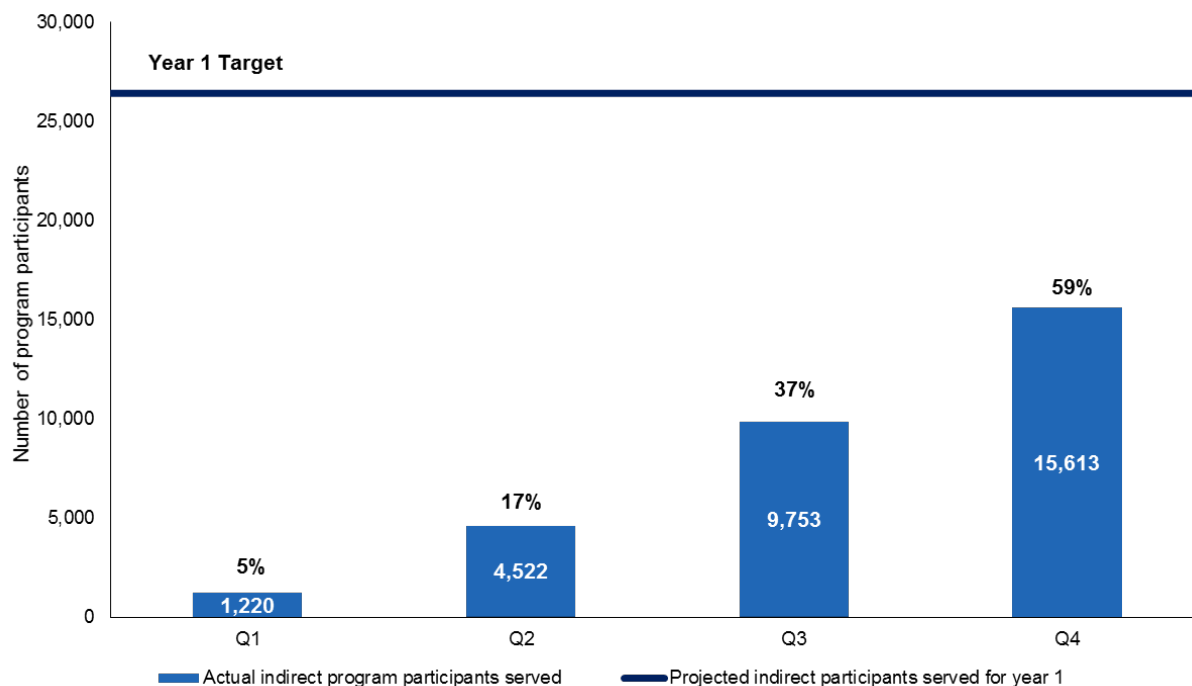
areas. Once implementation is complete, sites are expected to shift to the maintenance and quality improvement stage.

Some sites experienced delays in launching specialties. In some cases, delays were the result of a perceived lack of sufficient specialist time to respond to eConsult requests. In other cases, specialists expressed skepticism about the eConsult process either because of the complexities associated with certain conditions they treated or because they did not have access to images or other data required to assess a patient's condition sufficiently. To enable participation by the specialty divisions who were reluctant to participate, sites have made site-specific changes, such as allowing mid-level staff to provide an initial review of eConsults; having attending physicians sign off on responses; or installing programs that allow specialists to view electronic images, for example of rashes or blood smears.

Another challenge sites faced is the switch from the standard to the enhanced referral pathway. Before this intervention, the standard pathway for referrals was an administrative task in the EMR that was initiated by the PCP. For those specialties that have gone live as part of the CORE program, when a PCP initiates referrals the eReferral template should appear in the physician's preference list—a list of favorite forms, templates, and orders that each physician sets up in the EMR. Due to limitations with the EMRs, however, some sites could not turn off their old, standard referral pathways. As a result, a number of PCPs were still using the old, standard referrals instead of the enhanced referrals. Currently, three sites have required the use of enhanced referrals across all live specialties, while two sites are working to obtain organizational buy-in to do the same.

Since participation by individual PCPs at each of the sites in the program is voluntary, the Association of American Medical Colleges provided enrollment estimates only for indirect participants. This target represents the total number of patients who will be indirectly served by this program as a result of the improvements in primary care delivery that are being realized through the use of the eCR tools. By the end of Year 1, physicians provided assistance to more than 15,000 patients by using the eCR tools.

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Note: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The CORE program uses the Epic EMR to facilitate communication between PCPs and other specialists in order to support primary care management of medical conditions that might otherwise require referral to other specialists. As mentioned earlier, if a specialist provider thinks that a patient in an electronic consult request should be seen in person at the specialty clinic, he or she can convert the eConsult to an eReferral request. The primary care physician is then expected to provide information, detailed in the relevant eReferral electronic template, to support the first visit to the specialist by the patient. Although the eConsult and eReferral components of the program are implemented separately, site-level staff typically experience these components as part of an integrated program. In this section, we identify some of the key facilitators of and barriers to implementing both components of the CORE program.

Implementation of the CORE program focuses on improving the culture of collaboration between primary and specialty care in the participating sites and builds on lessons learned during a prior implementation of the program at UCSF. The specialty templates developed at UCSF provided the basis for those used in the participating sites we visited. Awardee leaders reported that templates were delivered to site-level staff in such a way that they were easily adaptable to local requirements. Site leaders were encouraged to “put their own bells and whistles on the tool” or even develop their own templates. Limiting implementation of the CORE program to sites already using the Epic EMR (which was also used at the UCSF pilot site) meant that Epic Systems Corporation could work with the Association of American Medical Colleges to optimize the workflows in the EMR to support CORE. In-house, site-level Epic information technology (IT) teams provided local customization when needed. However, access to Epic programming resources varied across the sites. For example, one site is in the process of a substantial upgrade that is affecting timelines for the project.

The Association of American Medical Colleges program leaders and staff were closely involved with each of the implementing sites. This contact usually occurred through regular meetings with site leaders and managers and during regular Epic “office hours” with site-level program staff to address ongoing EMR-related issues. In addition, the awardee supports a learning collaborative for sharing learning across sites, which includes a project website and a regular newsletter for highlighting and sharing best practices and implementation approaches.

All of the sites we visited had clearly identified clinician champions. Both specialist and primary care physicians reported that use of eConsults and eReferrals is a relatively easy task. In all three sites we visited, implementation and use of eConsults and eReferrals required little physician training, and use of the eCR system was reportedly growing. Training in the use of the tools is not a major emphasis because requesting an eConsult is a relatively easy task for PCPs and for specialists, who are provided with “cheat sheets” to walk them through the multiple steps in Epic required for them to respond. One of the sites is currently developing an orientation program for newly hired PCPs to ensure long-term use of the tools and, thus, sustainability of the CORE program.

Both primary care and specialist physicians appreciated the opportunity to learn from each other and improve their relationships through the CORE program. Reflecting the

awardee’s stated objective of using the CORE program to improve the culture of collaboration between specialists and primary care, both groups of physicians reported improvements in communication with their colleagues in other areas of the medical center as a valuable outcome of the program. In

“I personally am very enthusiastic about the concept that this . . . will ultimately . . . be cost effective, but I am most enthusiastic about the teaching part.”

— *Specialist physician eConsultant*

In addition, specialists and primary care physicians across all three sites reported that the CORE program provided valuable opportunities for specialists to teach primary care physicians about their area of expertise and for primary care physicians to enhance their knowledge of topics that they commonly encountered in their practices. This perceived educational benefit of the program

is likely an important reason for its successful implementation in these sites, given their educational missions.

We observed some variation in leader commitment to the program across the sites we visited. In two sites, this support has reportedly been strong and consistent. In a third site, turnover at the senior leadership level made institutional support difficult to arrange at first. Despite leadership changes and support from the awardee staff, commitment to the project is reportedly still not consistently shared across senior leaders at this site.

All three of the sites we visited reported experience with previous and concurrent projects that they saw as compatible with the objectives of the CORE program. These prior experiences included grant funding for eConsults from another source, prior experience with telemedicine, and, in two of the sites, formation of accountable care organizations or the development of other at-risk contracts, in which reductions in unnecessary specialist visits would not lead to financial loss. However, in one site the costs in terms of potential lost revenue from these avoided visits have “caused the accountants to raise a lot of red flags,” requiring the health system chief financial officer’s agreement to subsidize the work.

The perceived need to improve specialist access, a key motivator for implementation, varied across the sites. Two sites reported that the project met their needs in this area (at least potentially), while the third site reported that specialist access is not a problem and that participation in the project was motivated by intellectual interest.

3. How do the awardee and implementation sites make decisions about program-related changes?

In order to make decisions about program-related changes, the CORE staff needed timely data on implementation and utilization of the program components.

The awardee has developed a robust system for tracking and monitoring use of eConsults, rates of conversion to referrals or eReferrals, and provider satisfaction. As part of this system, the awardee has developed a site-level dashboard for displaying program data. This allows staff at each of the implementation sites to track their use of eConsults and eReferrals over time and to compare this information to similar data from other sites. All of the sites that we visited reported regular use of the monitoring system to identify areas for potential quality improvement. One site reported using these data to build a future business case for the CORE program based on the number of specialty physician visits avoided through eConsults and the potential cost of these visits. The awardee team from the Association of American Medical Colleges also visited each of the implementing sites to assess progress and make suggestions for implementation improvement. This process helped identify a problem with insufficient leadership commitment in one site, which led to developing recommendations for addressing the problem and then monitoring for the recommended changes.

4. To what extent have the awardee and sites begun to plan for or implement payment reforms?

The Association of American Medical Colleges created a template of the payment model, which was structured as a shared savings approach. Currently, one of the Association of American Medical Colleges' partners—Dobson DaVanzo & Associates—is collecting data from the sites to analyze the effect on downstream utilization and the overall return on investment for an eConsult. These data will help to further refine the model. Sites have varied levels of interaction with insurers about this intervention. One site is working directly with a self-insured plan administrator, who is paying for the eConsults on a fee-for-service (FFS) basis. The Association of American Medical Colleges will use those utilization data to further refine the payment model. Other sites have had initial conversations with insurers to gauge their interest, but they are waiting until volume increases and they have captured enough data before engaging in discussions about payment reform.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we concluded that a rigorous impact analysis was feasible. We propose a robust difference-in-differences design to estimate the impact of the Association of American Medical Colleges' HCIA R2 award on beneficiaries of participating AMC primary care providers. Our analyses will compare changes in outcomes for the beneficiary populations of participating AMCs to beneficiaries of matched comparison AMCs. Because participation was chosen at the AMC level, we propose to match the participating AMCs with nonparticipating comparison AMCs. Specifically, we propose to pair each participating AMC with a nonparticipating AMC close in geography, size, and experience in primary care-based initiatives (that is, accountable care organizations or ACOs). To identify the providers (primary care and specialists) associated with comparison AMCs, we will obtain lists of National Provider Identifiers associated with the AMC health systems through SK&A.

E. Next steps

We look forward to continuing to work with the Association of American Medical Colleges for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next step in the impact analysis is to identify and pull claims data for all Medicare beneficiaries seen by primary care practices of the five participating AMCs. We will identify patients of the practices using claims data and compare this population to a finder file of beneficiaries provided by the awardee, which will help us to validate and adjust the same methodology for identifying patients at comparison AMCs.

We will then select comparison AMCs by matching to participating AMCs on simple characteristics, such as the presence of ACOs or other shared savings plan arrangements, size, and geography. The list of potential comparison AMCs is derived from a 1997 list of integrated academic medical center hospitals and includes long-standing AMCs, such as the awardees, with similar integrated hospital structures.² The comparison beneficiary populations will ultimately be defined as all adult Medicare FFS patients seen by physicians at primary care practices of the chosen comparison AMCs.

After attributing beneficiaries to the treatment and comparison groups, we will create the variables necessary for the analysis, including outcome and explanatory variables, and compare characteristics across those two groups to ensure sufficient comparability between the populations. We will assess the need to conduct a propensity score analysis to match comparison beneficiaries with those in the CORE AMCs and will estimate impacts. We will describe our findings in future reports.

² See https://www.aamc.org/download/372006/data/01-97_integrated_academic_medical_center_hospitals.pdf.

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APPENDIX B.2

AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION

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REPORT

APPENDIX B.2

HCIA Round Two Evaluation: American College of Cardiology Foundation

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 22, 2015)

Successes

- American College of Cardiology Foundation program leaders and vendors provided on-site training and substantial implementation support to sites before the program was launched.

Challenges and strategies to address them

- Educational materials are not helping patients make decisions about their treatment, as originally planned. The requirement that they return the patient education booklet and DVD to the sites is leading some patients to refuse them. These materials are available only in English and require patients to have a DVD player. To address these concerns, sites are considering whether to give patients pre-paid self-addressed envelopes and asking the awardee to translate the materials into Spanish.
- The extent to which sites were able to integrate the SMARTCare tools into their electronic medical records (EMR) varied, depending on the functionality of each site's EMR system. To address this, sites had to work with their EMR vendors to determine the best way to incorporate the tools while not adversely affecting work flows.

Lessons learned

- SMARTCare implementation is a complex task that requires technical support and a great deal of staff involvement.
- Visible support from local leaders was an important component of implementation success.
- Flexible start-up periods allowed sites to launch as soon as they met the requirements for implementation.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 22, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery systems and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is Smarter Management and Resource Use for Today's Complex Cardiac Care (SMARTCare), which is being implemented by the American College of Cardiology Foundation. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the American College of Cardiology's SMARTCare program, including initial implementation experience, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent visit to American College of Cardiology implementation sites; and a review of American College of Cardiology reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of American College of Cardiology's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of American College of Cardiology's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

American College of Cardiology is implementing SMARTCare at nine clinical sites throughout Wisconsin and Florida. The program focuses on providing clinical decision support for managing stable ischemic heart disease (SIHD) to cardiologists and other clinical specialists at the point of care, supporting shared decision making with the patient and enabling the use of clinical registries to track and improve care. To meet these objectives, SMARTCare sites use five related tools based on health information technology (health IT) (1) IndiGO, (2) FOCUS, (3) ePRISM/eLumen, (4) Tonic, and (5) patient education materials from Health Dialog. IndiGO calculates and displays a personalized risk of an adverse event and suggests and prioritizes approaches with the greatest potential to reduce that risk. FOCUS is a computerized decision-support tool that incorporates participant-specific information to determine whether ordered imaging meets appropriate use criteria and, if so, which test is most appropriate (and cost-effective) for a specific participant. ePRISM produces a customized, patient-specific consent form that provides participant education along with estimates of benefits and risks of complications, which are tailored to each individual participant prior to invasive cardiac catheterization or percutaneous coronary intervention (PCI). eLumen is an extension of ePRISM that takes all the patient information populated in ePRISM and provides guidance to the physician during the catheterization as a way to limit any complications. Tonic, a web-based application that runs on an iPad, is used for a participant to consent to collection of his or her health data and to track participant-reported outcomes going into and coming out of treatment. Health Dialog provides additional participant education materials—such as a pamphlet explaining stress chest discomfort—to inform and prepare participants for a more effective dialogue with their physicians.

The decision support provided with these tools is aimed at reducing inappropriate use of cardiac screening tests and procedures. It is intended to guide clinician decisions, from ordering tests and procedures through performing procedures. The tools also provide customized patient-specific estimates of risks and benefits of specific procedures along with multimedia tools, including printed materials and an interactive DVD to support shared decision making. The SMARTCare initiative requires that these tools work with multiple EMR systems across a variety of organizational settings. For effective use, most clinical sites embed the tools within their EMR so that they are readily available at the point of care, where physicians make recommendations and participants make decisions.

We visited three clinical sites to collect detailed information on the program staffs' and other stakeholders' experiences to date in implementing SMARTCare and any changes made to the program during implementation. We also sought information relating to common facilitators of and barriers to implementation and any updates to the planned payment model.

In the table below, we provide an overview of American College of Cardiology's SMARTCare program.

Table 1. American College of Cardiology: SMARTCare characteristics at a glance

Program characteristic	Description
Purpose	The awardee focuses on changing clinician behavior by providing: <ul style="list-style-type: none"> • Decision support tools at the point of care to assess treatment options for SIHD • Participant education materials on specific treatment options • Individually tailored risk and benefit information to support shared decision making
Components	<ul style="list-style-type: none"> • Clinical decision support (primary) • Shared decision making (primary) • Health IT (secondary)
Target population	The primary participants are Medicare beneficiaries who receive care at the awardee sites and are being evaluated for SIHD. Participants covered by private insurance will also be eligible to participate.
Theory of change/theory of action	Improving risk communication and shared decision making between participants and cardiac physicians will lead to optimizing medication and lifestyle programs for the greatest potential impact on a participant's risk factors.
Payment model	Bundled payment, shared savings, value-based purchasing
Award amount	\$15,830,092
Launch date ^a	11/4/2014
Setting	Provider-based: primary care physician (PCP), specialty care clinic, hospital, academic setting
Market area	Rural, urban, suburban
Market location	Florida, Wisconsin
Core outcomes	<ul style="list-style-type: none"> • Decrease in the percentage of imaging tests that do not meet appropriate use criteria • Decrease in the percentage of elective PCIs that do not meet appropriate use criteria • Decrease in the risk-adjusted bleeding complication rate for elective PCIs • Improvement in either the Seattle Angina Questionnaire score (patients with chest pain) or the Heart Quality of Life score (patients without chest pain) • Increase in adherence to coronary artery disease (CAD) treatment guidelines: <ul style="list-style-type: none"> – Angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blockers (ARB) therapy prescribed for participants with (diabetes or left ventricular systolic dysfunction [LVSD]) – Oral antiplatelet therapy prescribed for participants with CAD – Aspirin or other antithrombotic prescribed for participants with acute myocardial infarction (AMI), coronary artery bypass graft (CABG), PCI, or LVSD – Lipid control prescribed for participants with CAD – Beta blocker therapy prescribed for participants with CAD – Tobacco use assessment and tobacco cessation counseling administered to participants

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by American College of Cardiology to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee (on June 8, 2015, and June 18, 2015) and during visits to three implementing sites (in October 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

For the in-person visits, we chose three sites that would (1) represent a range in the extent to which the sites had implemented the tools and (2) ensure that we had a mix of large academic settings and smaller private practice settings. Our rationale was that the resulting mix of sites would give us a broad understanding of the potential barriers to and facilitators of the implementation of SMARTCare (see Table 2).

Table 2. Characteristics of selected American College of Cardiology implementation sites

Site name	Location	Type	Implementation stage	Date of visit
Medical College of Wisconsin	Milwaukee, WI	Academic medical center	Early adopter	October 7–9, 2015
Florida Medical Clinic	Land O' Lakes, FL	Private cardiology practice	Mid-adopter	October 14, 2015
Heartwell Clinic	Miami, FL	Private cardiology practice	Late adopter	October 22, 2015

For each visit, one or both of our implementation team members used semi-structured protocols to interview site-level program staff and frontline users of the tools. After obtaining consent from the interviewees, we audio-recorded and transcribed all interviews. One of the implementation team members coded program components, research questions, and concepts describing implementation experiences. We then extracted the coded text pertaining to the research questions identified in Section C and analyzed it to (1) determine how effectively the program was implemented (2) identify the facilitators of and challenges to using the tools for clinical decision support and shared decision making. Our findings from this analysis are presented in the next section.

C. Findings

1. How effectively has the program been implemented?

At the time of our visits, the program director informed us that seven of the nine implementation sites had launched the program. American College of Cardiology had originally planned to implement SMARTCare at 10 sites, but one site, Marshfield Clinic, was dropped in October 2015 because the contracting process was taking longer than the usual three to four months. This delay would have meant that by the time the site would have been ready to launch the program, the first year of the cooperative agreement would have ended, so there would have been less time for the program to effect change and less time for us collect data to assess the effectiveness of the program across sites. In other sites, implementation was delayed because of difficulties in (1) configuring EMR systems such that data could be transferred to various SMARTCare tools and (2) incorporating these tools into current, site-specific work flows. However, these delays did not affect our ability to collect data about implementation.

Sites that have launched are currently in varying stages of implementation. Some are expanding the use of the tools to their community partners; others are expanding use to more than one cardiologist. The program is being implemented as originally designed but sites made specific changes in how they integrated the tools into their EMR based on their systems' requirements or work flow needs. For example, one site has embedded links to the tools within the EMR; another placed the SMARTCare tools in a stand-alone website outside of the EMR.

For the seven sites that have begun to enroll participants, Figure 1 displays the projected enrollment and indirect enrollment by quarter. Enrollment in the SMARTCare program is triggered by use of the FOCUS decision support tool. This figure does not include enrollment for sites that have yet to launch.

2. Facilitators and challenges to using health IT for clinical decision support and shared decision making

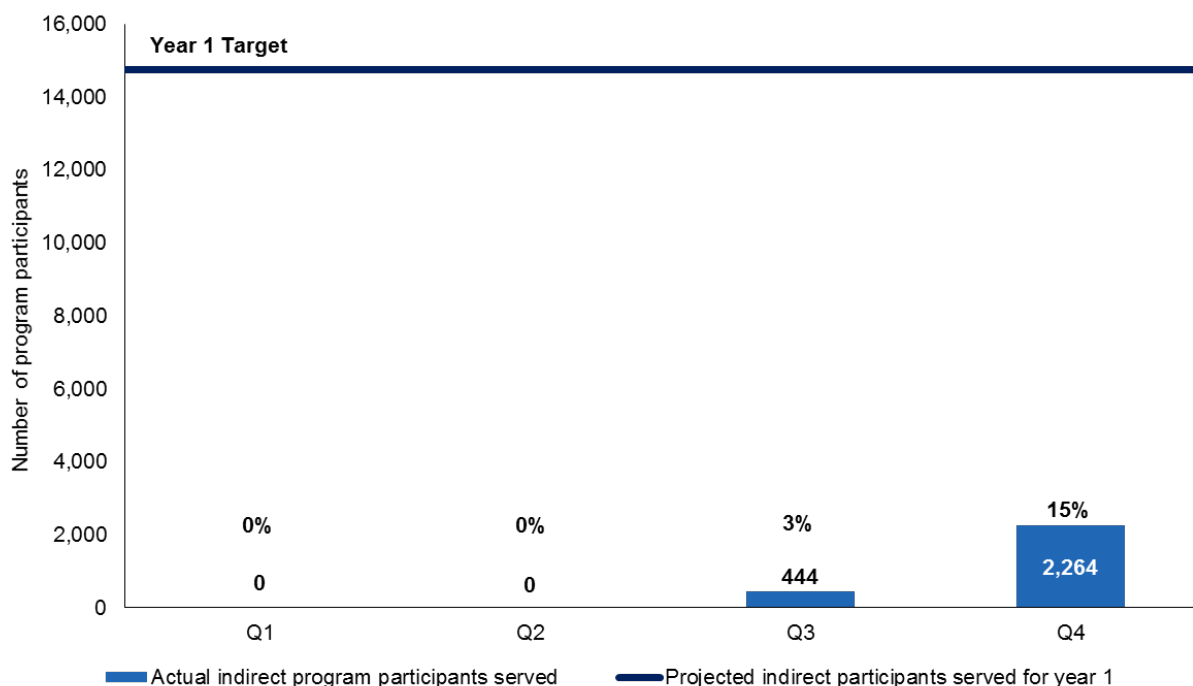
The components of the SMARTCare intervention are closely linked because, through health IT, they all provide both decision support for clinicians and support for shared decision making by patients. Program leaders and site-level staff therefore experience these components as part of an integrated program. In this section, we identify some of the key facilitators of and barriers to implementing the SMARTCare health IT tools that underpin the program.

Implementing multiple tools across a variety of EMR platforms is a complex task that requires coordination among different vendors, on-site technical support, and commitment from organization leaders at the site level to ensure sufficient resources. Awardee leaders coordinated support from vendors of each of the SMARTCare tools to facilitate implementation and worked closely with designated quality managers at each site to identify potential problems and help with solutions. The support provided through this process involved pulling together products from several vendors, making sure that data was effectively shared across various platforms, and educating local leaders and potential users on each tool. This support, along with ongoing monitoring of progress, was seen by program staff at sites we visited as vital for ensuring successful implementation of SMARTCare.

“When you pull that number of products together ... it's usually not this easy. (ACCF) did a lot on the back end to make this easier for the vendors.”

—Information technology support staff

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter. American College of Cardiology Foundation does not have direct program participants.

Despite this extensive support from vendors and awardee leaders, the three sites we visited had varying degrees of success when integrating SMARTCare tools into existing EMRs. Two sites were using the tools through their EMR platform. The third was successfully using data in its EMR to populate key fields in the tools, but the tools were available only through a web-based system that is separate from the EMR. All three sites had successfully established electronic interfaces between their EMRs and the tools but data-sharing was not in place to support all of the tools in at least one site. In the sites where tools were integrated into the EMR, information technology support staff, provided by the larger health system or through local expertise, worked closely with clinical champions to establish effective work flows. However, at one of these sites, access to the tools by PCPs had been lost before we visited, and even when the tools were available, they reportedly were not effectively integrated into clinical work flow. At another site, the EMR did not allow for the triggering of external programs for decision support at the moments when tests or procedures were being ordered, making integration impossible. In this case, the participating clinician typically does not directly interact with the FOCUS tool but relies on a paper-based form. Data are then entered into a web-based application by practice staff, limiting the timeliness of the decision support information. At all three sites, data mapping from EMRs to the SMARTCare applications was a complicated task and occasionally required training physicians to enter data differently to ensure that structured data was available for export.

Some characteristics of the SMARTCare intervention limited the implementation and use of the tools. At two of the sites we visited, staff members reported that the patient consent process required to enroll patients into the program was excessively time-consuming; at one of these sites, the Spanish version of the consent form would erroneously reject all patients from qualifying for SMARTCare. Staff were frustrated not only because the data-recording requirements for SMARTCare did not eliminate the data-recording and reporting requirements related to the prior authorization once required for specific tests and procedures, but also because the information entered into the tools was not saved automatically in the EMR. At one site, these potential disruptions to the clinical work flow and the anticipated negative impact on clinical productivity reportedly made it hard to persuade more physicians to participate. Patient education materials intended to support shared decision making regarding catheterizations were available in printed form and on an interactive DVD. However, site staff reported barriers to using these materials, including resources not being available in Spanish, patients lacking DVD players and preferring web-based information, and not having enough staff to track the return of the materials from patients. To address these concerns, sites are considering whether to provide patients with pre-addressed envelopes and are asking that materials be translated into Spanish.

We observed different levels of support for the program across the three sites. Senior leaders at two of the sites were publicly invested in the success of the program, so they motivated the staff and ensured that resources needed to support implementation were made available. The third site is part of an accountable care organization, and senior leaders there were reportedly more focused on reducing costs in other parts of the organization. At this third site, the local lead was not convinced that SMARTCare would meet future demand from payers, including

Medicare, for demonstrating the use of EMR-based decision support tools or for reducing the ACO's costs.

3. How do the awardee and implementing sites make decisions about program-related changes?

The leaders and frontline staff of all the HCIA R2 awardees need self-monitoring data in order to gauge their program's implementation and progress, and to make decisions about changing the implementation process or the program itself. Sites are currently sending usage data to American College of Cardiology, but we did not hear any reports of formal processes being in place for monitoring or gathering feedback about usage. Nonetheless, the sites are developing and using patient-tracking tools to ensure that patients are monitored throughout their contact with the program. These reports do not appear to be used currently to inform any program-related changes.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

Before the start of SMARTCare, American College of Cardiology had already developed a model bundled payment for SIHD in collaboration with members of the business community and insurers in Wisconsin. In reviewing the proposed bundle, the stakeholders wanted evidence that doctors and hospitals would actually use the SMARTCare tools. Now that the program is up and running in all sites, American College of Cardiology is collecting data on utilization and cost to inform the refinement of the payment model. The awardee is also working with several of the Florida sites that have close relationships with the Florida Health Coalition (a business coalition focused on health care quality improvement) and various insurers in the Florida market to further refine the bundle. To help this process along, these sites are trying to determine their own cost per episode of delivering care.

One challenge American College of Cardiology has encountered is that in discussions with large insurers, insurance company leaders have concluded that their legacy billing systems cannot process payment for the proposed bundle without substantial reprogramming, and they believe that manually processing this payment would be a labor-intensive process. As a result, American College of Cardiology partnered with outside vendors to operationalize the proposed payment system and model the bundle by using software that could translate it into codes that the insurers' legacy systems would be able to process.

D. Impact evaluability assessment

Delayed and uneven implementation across and within the health systems and practices participating in SMARTCare may limit our ability to conduct a rigorous analysis of the impact of the initiative. We will seek additional information from the American College of Cardiology about the present status and future expectations for implementation at each of the nine participating health care systems or practices, including when the initiative began and the total number of providers targeted for participation. We will use this information and Medicare data

on program enrollees to assess the feasibility of a rigorous impact analysis. If such an analysis is feasible, we are likely to recommend a difference-in-differences approach that isolates within-provider changes in outcomes over time for providers practicing in health care systems or practices participating in SMARTCare and compare these changes with those from an external, matched comparison group of providers.

E. Next steps

We look forward to continuing to work with American College of Cardiology for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

We are determining what data we need from American College of Cardiology that is not already included in the business associate agreement or memorandum of understanding, such as tax identification numbers, national provider identifiers, and the date that the intervention began at each of the nine systems or practices. In addition, we will arrange for the first data transfer from the awardee. After we receive the first data transfer, we will match the enrollees to their Medicare claims and evaluate their baseline characteristics. A key step at this stage will be to develop a list of procedure and visit codes for patients who are evaluated for potential or known stable ischemic heart disease (SIHD). At the same time, we will select potential comparison health care systems or practices (or providers) using data from such sources as SK&A.¹ After we select the matched comparison group of providers, we will identify patients of those providers who have the requisite procedure and visit codes, which includes patients evaluated for both potential and known SIHD.

¹ SK&A is a health care data solutions firm that provides access to comprehensive databases of health care providers and organizations.

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APPENDIX B.3

ALTARUM INSTITUTE

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REPORT

APPENDIX B.3

HCIA Round Two Evaluation: Altarum Institute

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014 – November 11, 2015)

Successes

- By the end of Year 1 (August 31, 2015), Altarum Institute and its partners had trained 58 primary care providers (PCPs) as part of the PCP training and technical assistance (TA) component of the Michigan Caries Prevention Program (MCPPE).
- Altarum expanded its team to include 29 staff, including 14 new hires, by the end of Year 1.
- Altarum and its partners engaged stakeholders in oral health care at the state and local levels to collaborate on outreach activities and maximize efficiency of the MCPPE operations. For example, Altarum established a Physician Advisory Committee to consult on PCP engagement and extend the reach of the MCPPE.
- To enhance physician recruitment, the MCPPE team partnered with the University of Michigan Medical School and Health System to develop a continuing medical education and maintenance of certification program as an incentive for provider participation in PCP training and TA.

Challenges and strategies to address them

- Organizational changes at the Michigan Department of Health and Human Services (DHHS), a key partner in implementing and sustaining the MCPPE, and confusion about the respective roles of Altarum and the state delayed progress on the health information technology (IT) system and payment model. Altarum and Michigan DHHS worked together to engage the appropriate stakeholders within DHHS and build support for the MCPPE.
- The MCPPE intends to facilitate communication between medical and dental providers through the health IT system. Because the system is still under development, PCPs who are trained through the MCPPE “refer” patients by printing lists of dental providers. This temporary work-around does not enable information exchange between medical and dental providers. Furthermore, the definition of “referrals” is unclear, which may result in variation across trained sites. To address challenges such as this one, the implementation team provides ongoing TA and meets regularly as a team to identify solutions that can be deployed through training or follow-up TA.

Lessons learned

- After initially casting a wide net to recruit PCPs for training and TA, Altarum realized that some of the practices signing up for training were not located in areas with high concentrations of Medicaid beneficiaries. To meet its goal of affecting over 1 million Medicaid beneficiaries, Altarum slowed recruitment and shifted to targeted strategies focused on providers serving low-income populations.
- Altarum and its partners aim to develop a health IT system that the state can use for oral health care monitoring, which requires transfer to the state for sustainability. However, the value of the system was not immediately clear to Michigan DHHS stakeholders. Ongoing efforts to both develop a tool that can align with the state’s IT infrastructure and maintain the commitment of appropriate state leaders will be important for achieving this goal.
- The MCPPE is attempting to address a large-scale public health problem by using both delivery system interventions and broader public health strategies. As such, the MCPPE has evolved to add new components, such as school engagement, to address gaps in oral health care. However, program leaders observed that managing the project’s scope while remaining focused on core program outcomes will be a critical issue as the MCPPE moves forward.

Note: This narrative describes the awardee’s implementation experience from the beginning of the cooperative agreement through the end of our site visit on November 11, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee’s self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children’s Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee’s early implementation experiences
3. Assess the facilitators of and barriers to each awardee’s success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Michigan Caries Prevention Program (MCP), which is being implemented by the Altarum Institute. In this document (referred to as a “narrative”), we examine this program’s first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the Altarum’s program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee’s application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to Altarum, their partners, and two implementing sites; and a review of Altarum reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the Altarum program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of Altarum's impact evaluability assessment and identify the next steps in our evaluation.

A. Introduction

Dental disease is one of the most prevalent chronic conditions among children and is a persistent problem for very young children (birth to 3 years of age), particularly low-income children.¹ The American Academy of Pediatrics (AAP) and the American Academy of Pediatric Dentistry recommend that infants receive an oral health risk assessment by 6 months of age and have a dental home by 12 months of age.² Clinical recommendations have encouraged primary care clinicians, who play a central role in the health care of very young children, to conduct oral health screening and apply fluoride varnish in the primary care setting. Recommendations regarding the application of fluoride varnish have evolved from a focus on high-risk children to all children, regardless of risk, at the age of primary tooth eruption through 5 years of age.³ In addition to these recommendations, the AAP added the application of fluoride varnish to the periodicity schedule for well baby and well child visits in 2015. These recommendations are intended to address a critical care gap in early childhood—that is, dental care—and encourage the establishment of dental homes earlier in childhood than has historically occurred.

¹ Clark, M.B., and R.L. Slayton. "Fluoride Use in Caries Prevention in the Primary Care Setting." *Pediatrics*, vol. 134, no. 3, 2014, pp. 626–633.

² American Academy of Pediatric Dentistry. "Guideline on Infant Oral Health Care." *Clinical Practice Guidelines Reference Manual*, vol. 37, no. 6, 2014, pp. 146–150.

³ In May 2014, the United States Preventive Services Task Force released a recommendation statement that primary care providers apply fluoride varnish to the primary teeth of all infants and children when the teeth start to erupt through age 5. See U.S. Preventive Services Task Force, "Dental Caries in Children from Birth Through Age 5 Years: Screening," May 2014. Available at <http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/dental-caries-in-children-from-birth-through-age-5-years-screening>. Accessed December 16, 2015.

Altarum, a nonprofit health research organization, has partnered with Delta Dental, the University of Michigan (UM) School of Dentistry, and the Michigan Department of Health and Human Services (DHHS), to implement the MCPP. The MCPP is a multifaceted program to improve access to preventive oral health care for Medicaid and Children's Health Insurance Program (CHIP) beneficiaries in the state. Formally launched on May 8, 2015,⁴ the MCPP aims to (1) expand access to preventive oral health services in the pediatric setting, (2) build capacity in the dental safety net, and (3) integrate oral health care across primary care and dental settings.

The MCPP includes three components:

1. Education and training

- Training and technical assistance (TA) for pediatric primary care providers (PCPs) and their office staff. This training covers (1) evidence-based standards of preventive oral health care using the Smiles for Life⁵ curriculum, (2) oral health screening, (3) referral to dentists and establishment of dental home, (4) the application of fluoride varnish, (5) patient and family education on oral health care, (6) processes for obtaining Medicaid reimbursement for covered services, and (7) guidance on how to adapt the intervention to the provider site. Participating providers are eligible to earn continuing medical education (CME) and maintenance of certification (MOC) Part IV credits. After deployment of the health information technology (IT) system, this component will include training on the health IT system as well. Altarum provides ongoing TA for up to seven months after the initial training for sites enrolled in the CME and MOC performance and quality improvement activity and for up to four months for other sites.⁶

⁴ The launch date was defined by Altarum and was recorded in documents submitted to the implementation and monitoring contractor.

⁵ Smiles for Life is a national oral health curriculum. Since 2008, Michigan Medicaid reimburses pediatric primary care providers (including physicians and nurse practitioners) who receive certification for undergoing appropriate training for conducting oral health screening and applying fluoride varnish for children up to 35 months of age. In July 2012, the state required Smiles for Life certification for reimbursement for these services. The Smiles for Life editor gave permission to Altarum to use the curriculum and to directly certify physicians and nurse practitioners who complete the MCPP training in Smiles for Life. Altarum submits the certifications to the state Medicaid agency. Doing so reduces the burden on the physician and nurse practitioner of having to obtain a certificate and submit certification to Medicaid.

⁶ The MCPP does not provide services directly to patients. Altarum estimates the number of indirect program participants, or Michigan Medicaid and CHIP beneficiaries, based on the number of pediatric PCPs who participate in the training and TA. When providers sign up for training, they estimate the number of their patients who are 3 years old and younger and who are 17 years old and younger—figures which become the basis for estimating the number of indirect program participants.

- Educational outreach to dentists about evidence-based practices. Altarum and its partners intend to conduct outreach to dentists to educate them on evidence-based practices and to engage them in treating children with a high risk for dental disease. The team intends to reach dentists through Delta Dental and key dental stakeholders, such as the Michigan Dental Association, starting in Year 2.
- Educational outreach to public health practitioners and dental hygienists in public health settings. Altarum and its partners intend to train public health practitioners on referring children to dentists and on educating parents about oral health care.⁷ Altarum and its partners also intend to conduct outreach to dental hygienists, who can provide dental services in nonprofit settings without dental supervision under Michigan's PA 161 program (a state program enabling dental hygienists to practice without dentists' supervision in nonprofit settings).

2. Health IT system

- Referred to as the Dental Public Health System (DPHS), the health IT system will include a web-based and electronic medical record (EMR) interface to facilitate documentation of preventive service provision and referrals and coordination between pediatric PCPs and dental providers. The EMR module will also provide decision support and include a screening tool for oral health risks. Altarum also intends for the DPHS to serve as a quality monitoring tool for Michigan DHHS.

3. Patient and family engagement

- Altarum and its partners are conducting outreach and educational efforts through schools; early childhood education programs; and public health settings, such as Women, Infants, and Children (WIC) clinics.
- Altarum and its partners are creating a crowdsourcing website called SmileConnect that connects users who post oral health needs (for example, for educational materials) with users who can fulfill those needs.
- Altarum and its partners are using broad-based dissemination strategies—including, radio, television, an MCPP website, and social media—to build awareness of the importance of oral health care among children from birth to 3 years old and to create demand for oral health care.

⁷ The Delta Dental Foundation is providing the initial funding for training Women, Infants, and Children (WIC) providers. This funding is separate from the HCIA R2 funding. However, Altarum intends to continue engagement of WIC providers as part of the HCIA R2 program. In addition, in April 2015, Altarum presented to the Michigan Tribal Health Directors Association to establish the tribal organizations as another avenue for patient outreach, education, and referral to appropriate services under the HCIA R2 program.

The ultimate target population for the MCPP includes roughly 1 million Medicaid and CHIP beneficiaries in Michigan who are 17 years old or younger. The majority of program activities will focus on beneficiaries who are most likely to benefit from the program—that is, younger children up to 5 years of age.⁸ The program does not directly enroll patients, but rather trains pediatric PCPs who treat the target population. Altarum aims to train 1,500 PCPs by the end of the award.

Altarum and its partners expect the MCPP to (1) increase the proportion of low-income children who receive preventive dental services by 60 percent, (2) reduce the incidence of dental caries among low-income children by 30 percent, and (3) provide a net savings of \$21.1 million to the Centers for Medicare & Medicaid Services (CMS).⁹ Other key characteristics of the MCPP are described in Table 1.

B. Methods

The evaluation team developed this narrative based on analyses of (1) the awardee's application; (2) self-reports submitted by Altarum to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visits (which occurred on several dates between October 12, 2015, and November 11, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

All site visits were conducted in Michigan. We visited and interviewed program leaders at Altarum in Ann Arbor, Michigan. We also visited and interviewed Altarum's partners, including Delta Dental in Okemos, Michigan; Michigan DHHS, in Lansing; and the UM School of Dentistry in Ann Arbor. In addition, we visited two pediatric medical practices that received the Smiles for Life training through the MCPP.¹⁰ We initially selected three sites based on their geographic characteristics (urban, suburban, and rural) and number of providers trained (ranging from 1 to 21); however, one site declined to participate due to time constraints.

⁸ Altarum decided to focus on the youngest children after it originally applied for the award. The rationale was that younger children may be more likely to see PCPs at well child visits and less likely than older children to have developed dental caries.

⁹ Altarum lowered this goal from the \$29.3 million stated in the initial application after CMS requested that the payment model implementation savings that would have required additional waivers be removed.

¹⁰ When we selected sites in September 2015, Altarum provided a list of 11 medical practices that participated in the MCPP training.

Table 1. Altarum: MCPP characteristics at a glance

Program characteristic	Description
Purpose	The Altarum Institute, a nonprofit health research organization, has partnered with Delta Dental, the University of Michigan School of Dentistry, and the Michigan Department of Health and Human Services (DHHS) to implement the Michigan Caries Prevention Program (MCPP), a new, multifaceted program to improve preventive dental care for Medicaid and Children's Health Insurance Program (CHIP) beneficiaries in the state.
Components	<p>Education and TA (primary). The MCPP provides training and technical assistance to pediatric primary care providers (PCPs) and their office staff that covers (1) evidence-based standards of preventive oral health care using the Smiles for Life curriculum, (2) oral health screening, (3) referral to dentists and establishment of dental home, (4) the application of fluoride varnish, (5) patient and family education on oral health care, (6) processes for obtaining Medicaid reimbursement for covered services, and (7) guidance on how to adapt the intervention to the provider site. The MCPP also plans to conduct educational outreach to dentists, public health professionals, and dental hygienists on evidence-based standards for preventive oral health care and patient and family education on oral health care.</p> <p>Health information technology (IT) (primary). MCPP is developing a health IT system that will assist the medical provider in documenting preventive service provision, serve as a clinical decision support tool to calculate and track patient risk, and facilitate referrals to an accepting dental provider.</p> <p>Patient and family engagement (secondary). Altarum is using broad-based dissemination strategies to reach parents, children, and other stakeholders about the MCPP and evidence-based guidelines for oral health care through schools and early childhood organizations; public health settings (for example, Women, Infants, and Children clinics); television and radio; an MCPP website; and social media.</p>
Target population	The ultimate target population for the MCPP encompasses roughly 1 million Medicaid and CHIP beneficiaries in Michigan who are 17 years old or younger. The majority of program activities will focus on beneficiaries who are most likely to benefit from the program—that is, younger children up to 5 years old.
Theory of change/theory of action	Altarum hypothesizes that if more children, particularly younger children and those at high risk of dental disease, received preventive oral health care, the program would reduce the following: dental disease in the target population, the number of Medicaid beneficiaries with dental caries, and the costs associated with untreated dental caries. Altarum also hypothesizes that the program will improve beneficiaries' access to dental care by providing care in public health settings and by increasing referrals from PCPs to dentists.
Payment model	<p>Value-based purchasing</p> <p>The payment model, which is under development, is an incentive-based payment scheme that will reward PCPs and dentists for achieving high performance on a set of quality metrics.</p>
Award amount	\$9,383,762
Launch date ^a	May 8, 2015
Setting	<p>Education and training. Pediatric provider clinics and medical centers, dental offices, and other public health settings</p> <p>Health IT. To be accessed in PCP and dental clinics and hosted by Altarum or Michigan DHHS</p> <p>Patient and family engagement. Schools, early childhood education programs, public health settings, radio, television, SmileConnect website, MCPP website, and social media throughout Michigan</p>
Market area	Primarily urban and rural, in areas with high proportions of low-income and Medicaid beneficiaries
Market location	Michigan
Core outcomes	<ul style="list-style-type: none"> • Increase the proportion of low-income children who receive preventive oral health care by 60 percent • Reduce the proportion of Medicaid beneficiaries who have dental caries by 30 percent • Provide a net savings to CMS of \$21.1 million

^aAfter a planning period, the awardee's program became operational as of this date.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved interrater reliability on coding; and applied codes to identify program components, research questions, and concepts describing the implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this report on Altarum's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Altarum and Michigan DHHS encountered challenges finalizing partnership agreements,¹¹ which was a significant barrier to implementation of the MCPP in Year 1. At the time of the proposal, Altarum and the Michigan Department of Community Health agreed to partner. However, in early 2015, the state merged the Michigan Department of Community Health and the Michigan Department of Human Services to create Michigan DHHS, which brought in and led to new leadership and lines of authority. Stakeholders within Michigan DHHS were unclear of the state's role in the MCPP, and as MCPP plans took shape, more Michigan DHHS staff needed to be involved than initially planned.

These challenges led to delays in the start of the development of the health IT system and payment models. The state's involvement is critical for developing a health IT system that

"What we're trying to do here is create a dashboard, a data feed with a dashboard, of the oral health measures that any point in time—not just once a year—at any point in time they [the Michigan DHHS DPHS users] can go in and they can see and they can drill that down into different communities and can drill down to provider organizations and they can better, hopefully, better target their public health dollars."

— Program leader

aligns with the state's IT infrastructure and security requirements so that the system can be transferred to and sustained by the state beyond the HCIA R2 cooperative agreement.

Furthermore, state Medicaid data are necessary to inform the pay-for-performance payment model. Altarum leaders delayed the development of the health IT system to ensure that the state can use and maintain the system long-term. For example, Altarum originally planned to gather

data requirements for the quality monitoring component of the DPHS and to begin internal testing of the referral component of the health IT system in February 2015 and May 2015, respectively. The team delayed these activities until the fifth quarter. As of the November site visits, the team had commenced these activities. The team had also started developing the tool to integrate with one of the most common EMR products in Michigan. The team hoped to be able to deploy the health IT system to earlier trained cohorts, although the target date for deployment

¹¹ Altarum and Michigan DHHS finalized the Year 1 subcontract in May 2015. As of February 2016, Altarum and the state were still negotiating the data use agreement (DUA).

was unclear.¹² Similarly, the relationship with Michigan DHHS affected development of the payment model. The team planned a baseline analysis of the Medicaid data to inform the payment model, which was originally slated to be completed by March 2015. However, due to delays in finalizing a data use agreement (DUA) with the state, Altarum pushed the targeted completion date to January 2016.

Altarum and the Michigan DHHS worked together to resolve these challenges by building state support for the MCPP and securing buy-in from appropriate stakeholders within Michigan DHHS. For example, the team worked to coordinate activities between the state Medicaid agency and oral health program, engaged champions within Michigan DHHS to advocate for the program, and highlighted the value of the health IT system as a quality monitoring tool for oral health care—an important public health priority in the state. In addition, the Altarum team briefed the new state Medicaid director on the program in October 2015. Altarum and Michigan DHHS noted that they had made considerable progress toward resolving these challenges and were optimistic about the partnership and shared activities planned for Year 2.

Despite these challenges, the MCPP achieved several successes in its first year. These successes included (1) establishing the PCP training and TA program, (2) starting PCP recruitment, (3) hiring program staff, (4) engaging key oral health stakeholders throughout Michigan, and (5) launching a program website and social media outreach. Figure 1 presents the number of indirect program participants by quarter during the first year. The MCPP does not provide services directly to patients and so does not have direct program participants. Specifically, in the first year of the award, Altarum completed the following activities:

- Altarum and its partners operationalized the pediatric PCP training and TA component, including obtaining permission to use the Smiles for Life curriculum, adapting the curriculum for the purposes of the MCPP, hiring and training staff who train providers in the field, and building a joint-sponsored CME and MOC Part IV program with the University of Michigan Medical School and Health System for meaningful participation in the training.¹³

¹² The Q4 Operational Plan does not include an estimated date for deployment of the health IT system in the PCP training or TA component.

¹³ To earn CME or MOC credits, participating providers have to demonstrate that they “meaningfully participated” in the performance improvement activity—in this case, the MCPP interventions. A physician at the University of Michigan Medical School, in partnership with Altarum, attests to whether or not providers have meaningfully participated based on improvements in the provision of the targeted oral health care services from baseline through the seven-month follow-up period.

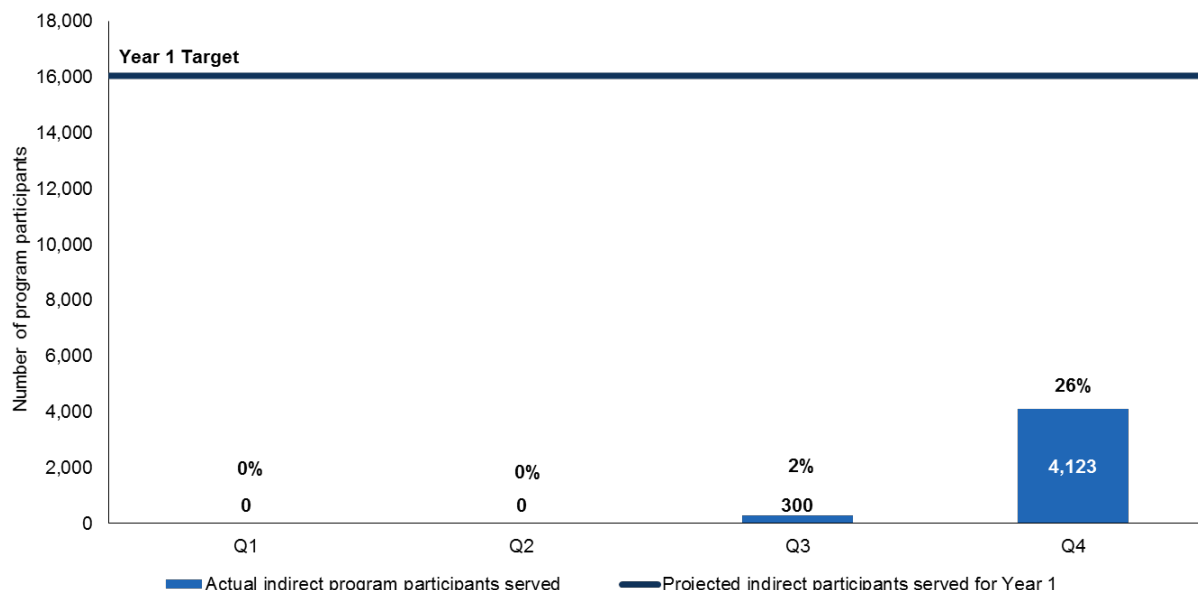
- Altarum and its partners started to recruit PCPs through one-on-one relationships that the team had previously established through Altarum's role as the state's regional extension center (REC)¹⁴ and through broad-based efforts, such as mailing flyers to pediatric practices. As of the end of Year 1 (August 31, 2015), the MCPPE had trained 58 PCPs (36 percent of its target of 162 PCPs for Year 1).¹⁵ An additional 20 PCPs had signed up for training, while over 90 more PCPs had expressed interest.
 - Altarum's team consisted of 29 individuals in various roles to carry out program components, such as PCP recruitment and overseeing field staff who lead the provider training. Several staff hired came with strong relationships in the industry, which facilitated physician, school, and dental practice participation.
 - In January 2015, Altarum and its partners established the Physician Advisory Committee, which includes representatives from the Michigan Oral Health Coalition, the Michigan chapter of the AAP, the Michigan Primary Care Association, and other organizations.
 - The MCPPE launched a program-specific website called MIteeth.org in February 2015 and started social media outreach through Twitter (@MI_Teeth) in May 2015.
- "By engaging stakeholders early, sharing what we were doing, emphasizing that we want to align and supplement them rather than duplicate, it's been a really positive stakeholder experience for this state-level initiative."

— Program leader

¹⁴ The regional extension center is referred to as the Michigan Center for Effective IT Adoption, or M-CEITA.

¹⁵ Altarum provided the total number of trained PCPs by the end of Year 1 in an electronic message to the Mathematica implementation lead in January 2016 and the Year 1 target for PCP training and TA in a phone interview in May 2015.

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014–August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter. Altarum Institute does not have direct program participants.

Altarum also modified the MCPP design in several ways:

- Two changes were motivated by discussions with the Center for Medicare and Medicaid Innovation (CMMI) that occurred before the program implementation began: (1) changing the original plan to enroll patients as direct program participants to no direct recruitment or enrollment of patients and (2) scaling back the payment model. The payment model originally included performance-based incentive payments, contact capitation, and resource-based relative value scale payments. However, because Altarum proposed to implement a payment model within Medicaid that would require a Medicaid waiver, CMS directed Altarum to develop and evaluate a payment model plan that could be implemented without a waiver.
- Altarum obtained approval for a CME and MOC Part IV program, in partnership with the University of Michigan Health System and Medical School, as an incentive for pediatric PCPs to participate in the Smiles for Life

“[The CME and MOC Part IV joint sponsorship] is the single most valuable tool that we have in our toolbox for recruitment. It will allow us to spend less money ultimately with marketing. . . . Without these incentives, it would be much harder to sell for the field staff, especially when they’re doing door-to-door recruitment.”

— Program leader

training. As part of requirements for the program, participating practices have to submit monitoring data for oral health screening, application of fluoride varnish, and referrals to a dental home during the indicated well-child visits. Participating practices report their data at baseline and at four and seven months post-training.

- MCPP leaders deliberately slowed enrollment of pediatric PCPs in the training and TA component and shifted their recruitment strategies in summer 2015.¹⁶ Initially, Altarum used recruitment strategies that could reach a wide audience and sought to train any provider who volunteered for training. However, many of the providers volunteering for training were in suburban practices in areas with low concentrations of Medicaid beneficiaries. Thus, MCPP leaders changed recruitment strategies to focus on federally qualified health centers and practices with high Medicaid populations. In addition, MCPP leaders were concerned that practices trained prior to the release of the health IT system may be less likely to adopt the technology, particularly if they have already earned CME or MOC Part IV credits. Therefore, Altarum decided to slow PCP enrollment in Year 1 to enable the health IT development process to catch up. Earlier cohorts of trained practices may have a chance to receive training and TA on the health IT system before engagement between the MCPP and providers has ended.
- Altarum added a new element of its outreach activities focused on the engagement of schools and early childhood education programs to reach low-income children. Altarum initiated the development of a web tool (SmileConnect), as the primary mechanism for school engagement. Slated to launch in early 2016, SmileConnect is a website to facilitate the matching of identified needs for oral health care education or services with resources to meet those needs. This website is modeled after DonorsChoose.org. Like that site, it is intended to be a vehicle for crowdsourcing, or eliciting resources from the public. For example, the team envisions that teachers may post a need for oral health care curriculum, which would be fulfilled by other users of the site, or public health organizations could post a need for volunteer dental services, to which dental students who need public service hours could respond.

"Part of the reason that we [added SmileConnect] is because we were . . . trying to create a safety net. In particular communities, there's not the dental capacity there."

— Program leader

¹⁶ Altarum expects to enroll enough PCPs in Years 2 and 3 to meet overall program enrollment projections.

After receiving PCP training and TA, PCPs and office managers were ready to implement the intervention. PCPs and office

managers in both sites we visited described the training as helping their practices to implement an intervention that fits into their medical model. However, one site champion¹⁷ noted that, although the training emphasizes referral to dentists, the definition of “referrals” was less clear. At both sites, staff described referring patients and families to dentists in a process that is analogous to referrals to specialists, although one site noted a

“We’re kind of injecting [the MCPP interventions] into the visit. At first, I was thinking, ‘Oh, it’s going to take more time.’ But it’s not getting us backed up. . . . The invested time and effort you make goes a long way in preventing these kids from coming back in three years needing a physical for his first sedation procedure because he’s getting dental work. . . . That’s the whole thrust of pediatrics—it’s preventive care.”

— Site team member

lack of existing coordination between medical and dental providers. In addition to the challenges regarding referrals, one site described the need for a demonstration showing how to physically apply the fluoride varnish on patients’ teeth, which was viewed as a missing component of the training. Despite these concerns, both sites said they had a contact person on the MCPP team to ask follow-up questions as needed.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

a. Primary component: education and training

The MCPP includes education and training to pediatric PCPs and medical practices, dentists, and public health professionals.

To carry out the PCP training and TA component, Altarum staff recruit PCPs by (1) leveraging existing connections between Altarum and medical practices, (2) encouraging members of the Physician Advisory Committee to recruit their colleagues, (3) engaging stakeholder groups, (4) cold-calling medical practices, and (5) conducting other outreach such as sending mailers and attending conferences. As of fall 2015, Altarum had six implementation specialists, who were geographically dispersed throughout the southern portion of the Lower Peninsula in order to recruit and provide training and TA locally. Altarum will continue to add staff, particularly to expand the program’s reach into northern Michigan, including the Upper Peninsula. However, MCPP leaders noted that expansion of field staff would require careful planning because northern Michigan is less densely populated than areas where they have deployed field staff. Altarum and the UM School of Dentistry developed the training curriculum. The UM team trains new field staff, while Altarum’s TA lead attends new team members’ initial trainings to confirm fidelity to the curriculum.

¹⁷ Altarum requires participating practices to identify an on-site oral health champion who can spearhead the site’s efforts to incorporate the MCPP interventions.

Certain factors specific to the MCPP team act as facilitators of or barriers to effective implementation of this component:

- **Altarum is leveraging previous relationships with medical practices (formed when Altarum acted as the state’s REC) in recruiting providers to the MCPP, which can facilitate enrollment of providers in the training and TA component.** For example, both sites that participated in the site visits worked with Altarum on obtaining meaningful use certification. One site representative indicated that this previous experience with Altarum was one of the reasons the practice signed up for the MCPP training. Altarum has developed a multifaceted recruitment strategy—including, the addition of the CME and MOC Part IV program and creation of a Physician Advisory Committee, which is intended to provide a network of physician program champions.
- **Program leaders do not require implementation specialists to have a dental background but rather seek candidates with a background in quality improvement.** Not requiring a dental background for the implementation specialists allows for a wider pool of candidates. However, without a dental background, these staff are dependent upon the UM dental team to answer technical or clinical questions. As of fall 2015, UM was working on building a database of standard questions and answers to assist field staff in providing speedy, technically accurate responses.
- **A geographically dispersed field staff facilitates implementation of the training and TA component.** Having staff cover designated portions of the state reduces travel time and enables staff in the field to gain familiarity with their participating sites and the local contexts—which enables the deployment of additional TA as needed.
- **Finding implementation specialists with an appropriate skill mix who reside in target geographic areas has been a challenge.** Although the staffing model facilitates the provision of training and TA, Altarum noted challenges in recruiting implementation specialists and hired staff at a slower rate than anticipated in Year 1. Moving forward, program leaders expect to continue adding staff to meet the demand for training. They noted that they have a considerable number of applicants and also rely on their team’s current connections to recruit the appropriate staff.

Factors in the broader environment may also influence the implementation of the pediatric provider education and TA component:

- **The lack of existing coordination between PCPs and dentists is a challenge.** MCPP

leaders described gaps in linkages between PCPs and dentists that are in part due to differences in the orientation of the disciplines and the nature of the dental industry, which is primarily composed of individual practices. Program leaders described the dental community as being less integrated, less familiar with quality measurement, and less knowledgeable about health IT adoption than the medical community.

In their view, the MCPP will encourage the dental community to engage in behaviors that are potentially new or less familiar, such as coordination with PCPs. Because making referrals to dentists is a key element of the PCP training and TA component, the existing lack of coordination between the two types of providers and the absence of health IT tools to facilitate their coordination are barriers the MCPP will need to overcome. To address this issue, training includes providing a list of dental providers in the area who accept Medicaid. Eventually, the DPHS should facilitate referrals by accessing a real-time database of dental providers.

“Baked into that connectivity is this thought of electronic health record: the pediatrician knowing that the child did get to a dental home, the dental home connecting to the pediatrician, passing information back and forth about the child. In today’s world, there’s little to no connectivity between a pediatrician and a dentist. There might be a referral, thank you, and that’s kind of the end of it.”

— Program leader

- **Gaps in access to dental providers may persist.** The expansion of Healthy Kids Dental, Michigan Medicaid’s enhanced dental benefit program, to the last three counties¹⁸ in Michigan as of October 2015 should reduce gaps in access related to lack of acceptance of Medicaid among dentists. Nonetheless, gaps may persist in the availability of enough dentists to meet the demand and in dentists’ willingness to treat patients from birth to 3 years old. As of October 2015, Altarum partnered with the Michigan Dental Association to field a member survey about dentists’ willingness to treat younger patients; as of November 2015, the team did not have survey results. Information from this survey will be used to inform the strategies for engaging dentists. In addition, the MCPP team plans to leverage communication about the expansion of Healthy Kids Dental to raise awareness among dentists about the MCPP and the potential influx of referrals.

¹⁸ In 2000, Michigan Medicaid enhanced dental coverage for Medicaid beneficiaries through the Healthy Kids Dental program under a Medicaid waiver. Healthy Kids Dental functions in a way that is more analogous to commercial insurance and has higher reimbursement rates than traditional Medicaid fee-for-service coverage. This program started with 22 counties and expanded on a gradual basis through October 2015 to the remaining 61 counties. By October 2014, Healthy Kids Dental covered 80 Michigan counties; in October 2015, Michigan Medicaid expanded Healthy Kids Dental to the last three counties (Kent, Oakland, and Wayne), accounting for nearly 400,000 low-income children.

- **The 2015 AAP periodicity schedule adds the application of fluoride varnish at regular intervals between 6 months and 5 years of age, and oral health screening and referral to dental homes between 6 months and 6 years of age.**¹⁹ Program leaders and the staff at the sites we visited indicated that the inclusion of these services in the AAP periodicity schedule will facilitate providers' adoption of the MCPP intervention. The team emphasizes this change in its messaging to providers.
- **Medicaid reimbursement for fluoride varnish application and oral health screening is both a facilitator and a barrier.** The MCPP training makes use of the Michigan Medicaid policy that physicians and nurse practitioners who receive Smiles for Life certification can receive Medicaid reimbursement for the application of fluoride varnish and oral health screening—which may be part of the provider incentive for participation.²⁰ However, MCPP leaders noted that the Michigan Medicaid program's reimbursement rates for these services are low compared with other states and commercial insurers, which raises questions about its strength as an incentive. In addition, implementing sites reported denials of claims for reimbursement from Medicaid managed care organizations (MCOs), even though the MCOs are supposed to align with state Medicaid policy. As a short-term work-around, providers can submit claims through the Michigan Medicaid fee-for-service system (Community Health Automated Medicaid Processing System, or CHAMPS) for reimbursement. Altarum field staff have incorporated this process into the training. Adding the CME and MOC Part IV credits is another solution the team has identified to increase provider participation.

Several factors specific to participating sites, including site characteristics and patient population, influence the education and TA component of the MCPP.

- **A site's organizational commitment to preventive health services as well as a history of participation in quality improvement efforts facilitate participation and adoption of the MCPP intervention.** Participating sites indicated that an organizational history of quality improvement and a culture that is receptive to change are key implementation facilitators.

"Our staff is very cooperative and very willing to do [the MCPP intervention]. That will help. The challenging part will be, of course, the time, any barriers with the flow, or if we have a very busy clinic, because it varies."

— *Implementing site champion*

- **Having a committed, on-site oral health champion also facilitates implementation.** MCPP program leaders require implementing sites to identify an oral health champion who can encourage implementation of the intervention and lead data collection to monitor the implementation. The team does not specify which level of staff is most appropriate for the

¹⁹ Application of the fluoride varnish is recommended every three to six months between 6 months and 5 years of age.

²⁰ Most states reimburse PCPs for the application of fluoride varnish, and a subset of states reimburses for oral health screening. However, the types of professionals, target age groups, frequency of services eligible for reimbursement, and training requirements vary across states.

role. Sites have selected office managers and physicians as champions. Regardless of the level, the oral health champion plays a critical role in implementing the intervention.

- **Structural issues related to workflow, the time dedicated to appointments, and the extent to which the site can modify the EMR to facilitate billing for oral health services can facilitate or inhibit implementation.** Providers who went through the training underscored the pressure of completing a well child visit within a reasonable amount of time. Oral health is only one of many issues to cover with parents. One site with 15-minute appointment blocks observed that clinics with shorter appointment windows may face greater time constraints in implementing the MCPP intervention.
- **Patient population characteristics may pose barriers to implementation.** Both sites visited described challenges posed by the complexity of patients' medical issues as a potential barrier because oral health is one of many areas to address. In addition, serving high Medicaid populations means that many patients face barriers to access related to transportation and other challenges with keeping their appointments.

In addition to the PCP training and TA component, Altarum and its partners intend to conduct educational outreach to dentists and public health professionals, such as WIC providers, in Years 2 and 3. To engage dentists, Altarum and its partners are using existing connections to dentists, for example through Delta Dental. They also plan to establish a new dental advisory committee in Year 2.

As of fall 2015, these activities were just getting under way, but the MCPP leaders anticipated several facilitators of and barriers to engaging dentists. The expansion of Healthy Kids Dental to areas with high-need populations should facilitate MCPP implementation by increasing the number of dental providers who participate in Medicaid. Alternatively, the team speculated that dentists may resist the MCPP due to three factors: (1) dentists may have concerns about PCPs performing dental services, (2) dentists may have concerns related to being held accountable through quality measurement and pay-for-performance (initiatives that are less familiar to dentists), and (3) some dentists do not typically treat patients under 3 years of age. However, one MCPP leader indicated that the MCPP is a referral source for dentists—resulting in new patients—and hypothesized that dentists would quickly get on board. To address these anticipated challenges, the team intends to (1) convene dental stakeholders through the dental advisory committee, (2) conduct outreach about the MCPP program and evidence-based guidelines, and (3) elicit input from dentists on the development of the DPHS.

"We focused on physicians and rolling this out, and so that was the first step. And now we're building this pipeline. We're getting the message going to the families, and now it's the dental providers."

— MCPP staff

Similarly, the MCPP team had begun conversations with key stakeholders, such as the Michigan WIC agency and the Michigan Tribal Health Directors Association, to initiate its outreach to public health professionals in nontraditional settings. The MCPP team anticipated

that the challenges related to conducting outreach in these contexts would be highly dependent upon characteristics of local chapters or agencies. However, the team has attempted to address these potential challenges through early engagement of state and tribal leaders.

b. Primary component: health IT

As with the education and training component, the health IT component is affected by factors specific to the MCPP team and program design, as well as factors in the broader environment.

- **Changes at Michigan DHHS and challenges in engaging the right stakeholders within the state to begin conversations about the DPHS delayed the development of the health IT system and the finalization of the partners' DUA.** Engagement of key players at the state who value the DPHS is important for the sustainability of the health IT system beyond the award period. However, changes at Michigan DHHS and lack of clarity about the state's role in the MCPP created challenges in initiating the development of the health IT system. To address this challenge, Altarum and Michigan DHHS team members worked together to engage the right internal stakeholders to ensure that the system is built to accommodate the state's infrastructure and needs so that it can be transitioned to state ownership in the future.
- **Altarum's team of developers has experience developing the Michigan Care Improvement Registry (MCIR)²¹ and developing tools for EMR products, which can facilitate Altarum's development of the DPHS.** Drawing on the MCIR experience, the team understands the process that is required to develop a system that is transferrable to the state. Furthermore, the team intends to take a staged approach to developing the DPHS. The team will first develop a tool to interface with a familiar EMR product, then expand to other EMR products used among pediatric providers in Michigan.
- **The MCPP identified a web-based solution for providers who do not have an EMR or who use an EMR for which the DPHS is not adapted; however, this solution is taking time to roll out.** The team plans to use the State of Michigan Single Sign-On (SSO), a web resource that pediatric providers visit regularly to access the MCIR. The SSO will function as an entry point for users to access the DPHS via the web. Although this web interface expands the accessibility of the tool, challenges with state requirements for user authentication to access the state SSO and with adding dentists who do not currently access the SSO will take time to resolve, according to program leaders.

c. Secondary component: Patient and family engagement

The MCPP team's patient and family engagement strategies are multifaceted. They include (1) stakeholder engagement; (2) development of strategies to engage schools and early childhood

²¹ The MCIR collects immunization information for children and is accessible to authorized users, such as health care providers. It provides up-to-date immunization information for health care organizations, schools, child care programs, pharmacies, and Michigan residents.

programs, including the creation of the SmileConnect website; and (3) broad-based dissemination strategies such as development of a website (MlTeeth.org), use of social media (through Twitter), and radio and television public service announcements.

Two external factors appear to influence patient and family engagement. First, a well-established network of oral health care advocacy organizations exists at the state and local levels. The MCPP team has built its outreach efforts on existing collaborations among these organizations. Second, fragmentation of schools and Head Start programs has made it difficult to use schools as an arena for outreach to children and parents. The MCPP staff have focused initial efforts on using the SmileConnect website as a tool to link needs for oral health care education and preventive services to educational resources and dental services. In addition, the staff sends monthly newsletters to Head Start teachers throughout the state and has established a relationship with the Michigan Head Start Organization and Head Start Collaboration Office to integrate oral health curriculum into Head Start programming.

3. How do the awardee and implementing sites make decisions about program-related changes?

Altarum and its partners took three key steps to gather information that would help make needed changes in the project's first year.

First, they contracted with two pediatric practices to serve as pilot sites. As a result of these contracts, the two practices are committed to (1) providing data to monitor the provision of oral health screening and fluoride varnish and (2) participating in site visits and weekly calls with the MCPP implementation team.

"I think that [screening, fluoride varnish, and patient and family education] have to go together for you to really see a change in health in these children. I mean, each component in itself will be effective, but all three together would be more effective. And so, it's hard without having pilot sites to really monitor that over time, which is why the pilot part of the program was so important."

— MCPP program leader

"That's been really nice—to be able to identify barriers that are within the practice, if they communicate that . . . through the surveys. . . . So we're continually trying to learn and improve during this process. That way, everybody's kind of talking to each other about what we're seeing."

— MCPP staff member

Second, Altarum administered a pre-post training survey for PCPs. This survey captures practices' current oral health care procedures and providers' comfort levels with applying fluoride varnish. It also asks respondents about barriers to implementation, concerns, or outstanding questions. Altarum structures custom measures based on these data.

Third, as part of the CME and MOC Part IV program, Altarum asks participating providers to submit aggregate chart data on the provision of oral health screening, application of fluoride varnish, and referral to a dental home. Practices provide baseline data (one month prior to training) and then follow-up data at four and seven months after training. Altarum plans to compare the CME and MOC Part IV data with the Medicaid data to assess the consistency between these two data sets in terms of their rates of oral health risk screening and application of

fluoride varnish. This comparison may help estimate the magnitude of any potential under billing of Medicaid for these services.

In addition to the pilot sites and surveys, team meetings provide opportunities for identifying ways to improve the program. The implementation team meets weekly as a group, monthly with the physician engagement lead to discuss trends in the CME and MOC Part IV data, and monthly with the internal quality improvement analysts to discuss their survey analysis. These meetings are forums to review participant feedback and identify opportunities to improve the training and TA component.

Feedback from trained PCP sites, particularly the pilot sites, has refined the PCP training and TA. For example, one issue that was identified through the pilot sites is the lack of billing codes in EMRs. Without a link between the EMR and billing and a systematic way to document provision of the services (for example, through a checkbox), providers may not receive reimbursement for services and key monitoring data may not be readily extractable. Thus, the implementation specialists now work with the participating sites on workflow and making sure there are processes in place to facilitate reimbursement. Another issue identified through the pilot sites was asking providers to give caregivers one of three oral health care information sheets based on the child's particular characteristics. The pilot sites found that three separate sheets were difficult to manage. In response, the MCPP leadership team was working on developing a single information sheet.

After discussions with CMMI, Altarum changed from direct enrollment of patients to direct enrollment of providers and scaled back its payment model. Additionally, CMMI has influenced the design and implementation of the MCPP—for example, by supporting the development of SmileConnect.

"We've really thought of doing something that would be successful and small and not too cumbersome to implement, but something that would also facilitate sustainability for our program. That would really be a pay-for-performance model that would focus on physicians who see children zero to three on Medicaid and who would provide fluoride varnish and oral health screening. On the dentist side, it would be pay for performance for dentists who see children zero to three on Medicaid."

— MCPP team member

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

Altarum proposed a pay-for-performance model focused on core outcome program measures for both medical and dental providers.²² The MCPP team views the model as a particularly important tool for incentivizing dental

²² For PCPs, covered services include oral health screenings and fluoride varnish applications provided to Medicaid beneficiaries under 3 years of age. The measure set includes application of fluoride varnish in a medical setting and completion of an oral evaluation in a medical setting. For dental providers, the measure set includes dental exams for 1-year-olds and preventive oral health services for Medicaid beneficiaries under the age of 3. These services include application of fluoride varnish in a dental setting and completion of an oral evaluation in a dental setting.

providers to accept children from birth to 3 years old and to coordinate care with medical providers.

The team made progress toward writing technical specifications for those measures, but as of fall 2015 had not yet obtained relevant Medicaid data to move forward. Outstanding issues include establishing the incentive amount, baseline performance, and a performance or achievement threshold or target. Due to delays in finalizing a DUA with the state, Altarum had yet to receive Medicaid data that could help establish baseline performance distributions that could inform the achievement target. As an interim work-around to be able to keep moving forward on efforts to inform the performance targets, Altarum intended to use Medicaid data obtained through the Research Data Assistance Center (ResDAC). Altarum's longer term solution remains obtaining Michigan Medicaid data.

Altarum had not yet engaged the Physician Advisory Committee or other medical or dental provider stakeholders in developing the payment model.

Some members of the MCPP leadership team indicated that the relative delay in integrating quality measurement into dental services may make pay for performance a hard sell among dentists. Others see this model as an opportunity to incentivize desired behaviors among dentists.

"What it's really going to come to is if you're going to do a payment model, you got to make sure it's going to cover peoples' cost and it's got to be attractive enough for their time."
— MCPP leader

Altarum plans to partner with Michigan DHHS and potentially a commercial health care insurer to implement the payment model, but had not formally reached out to commercial insurers as of October 2015. Although Michigan DHHS is committed to helping the MCPP, its role in developing the payment model has not yet been finalized. Furthermore, because some commercial payers reimburse medical providers for oral health screening and the application of fluoride varnish at rates higher than Medicaid, Altarum believes commercial insurers may have an interest in the MCPP. Altarum plans to engage the largest commercial payer in the state.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with MCPP staff, we concluded that a rigorous impact analysis was feasible. We are pursuing a difference-in-differences design that compares a treatment group composed of Michigan Medicaid and CHIP beneficiaries attributed to pediatric primary care practices that have been trained by the MCPP and a comparison group made up of Medicaid and CHIP beneficiaries who receive primary care services from a non-treatment group practices. We anticipate having sufficient (80 percent) statistical power to detect effects of smaller than 10 percent for all core outcome measures.

E. Next steps

We look forward to continuing to work with Altarum and its partners for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include identifying all Medicaid and CHIP beneficiaries in the treatment group and constructing a viable comparison group composed of beneficiaries who are not currently attributed to a participating provider. As of February 2016, we were in the process of finalizing our business associate agreement (BAA) and a memorandum of understanding (MOU) with Altarum (which we expect to be finalized and signed by both parties in March 2016). After executing the BAA and MOU, we will work with Altarum to obtain medical and dental enrollment, claims, and encounter data. Upon construction of a viable comparison group, we can proceed with propensity score matching on key observable baseline characteristics between treatment and comparison beneficiaries to maximize similarity between groups. The difference-in-differences method provides an estimate of the mean program impact for treatment beneficiaries. We will produce initial impact estimates, depending upon data availability, for the first one to two quarters of program operations, after specifying medical and dental outcome and explanatory variables. We will describe our findings in future reports.

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APPENDIX B.4

AMERIGROUP

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REPORT

APPENDIX B.4

HCIA Round Two Evaluation: Amerigroup

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–September 18, 2015)

Successes

- From the executive leadership to the coaches who work directly with youth, staff across all levels are engaged in the Coaching and Comprehensive Health Supports (COACHES) program and share a common commitment to its success.
- The program enrolled 116 participants in the first program year, just shy of the target of 126.
- Coaches reported that they have successfully engaged youth in the program and that youth are taking additional responsibility for their health and social service needs.

Challenges and strategies to address them

- Department of Family and Child Services (DFCS) caseworkers—potential referral sources for the program and important partners for improving service coordination—have not interacted with the COACHES program as anticipated. This has persisted over the first program year despite Amerigroup's and Families First's numerous attempts to educate DFCS staff about the program and meet with them to discuss it.
- The COACHES program initially faced challenges enrolling youth. Amerigroup and Families First overcame this barrier by expanding the program's eligibility criteria and shifting their enrollment strategy to encourage youth to self-refer to the program (instead of relying on referrals from DFCS staff).
- Youth who will soon transition out of foster care, the target population for the COACHES program, can be difficult to actively engage. To encourage engagement, coaches underscore two unique features of the program during recruitment events and meetings with youth: COACHES is voluntary and youth-driven.

Lessons learned

- The voluntary and participant-driven nature of the COACHES program helped encourage youth to enroll and stay in the program.
- Competing priorities limited the engagement of some potential program partners, which, in turn, hindered coaches' ability to support care coordination.
- COACHES staff found that maintaining a flexible approach while implementing the COACHES program allowed them to address implementation challenges as they emerged.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on September 18, 2015. Unless otherwise noted, the enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded the Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for

specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Coaching and Comprehensive Health Supports (COACHES) program, which is being implemented by Amerigroup and its partner Families First. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Amerigroup's COACHES program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, and key informant interviews conducted during a recent site visit to Amerigroup. We also reviewed Amerigroup's reports submitted to the implementation and monitoring contractor through August 31, 2015. In addition to providing a general description of Amerigroup's program, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of Amerigroup's impact evaluability assessment and identify the next steps in our evaluation.

A. Introduction

Amerigroup, the sole Medicaid managed care provider for Georgia's foster care program, received an HCIA R2 cooperative agreement to implement the COACHES program. Through COACHES, Amerigroup and its partner, Families First, are providing intensive coaching services for youths who are about to transition out of foster care. Amerigroup and Families First intend to improve the youths' understanding of the health care and social service systems and to increase their ability to independently navigate these systems. The COACHES program is employing three primary program components to achieve these goals: (1) patient and family engagement, (2) care management services, and (3) outpatient care coordination. Amerigroup and Families First see all three components as being interrelated and critical to the success of the program. Amerigroup hypothesizes that foster care youths who work closely with a coach will better understand what services they need and how to access them. The knowledge gained from this relationship, in turn, will result in better health and social outcomes and lower costs. Other key characteristics of Amerigroup's program are noted in Table 1.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Amerigroup to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), and (3) qualitative data gathered during initial telephone discussions with the awardee and our site visit to the COACHES program from September 16 through 18, 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed program leaders at Amerigroup and Families First, program coaches, and program stakeholders—including staff members at group homes, independent living programs (ILP), and Department of Family and Child Services (DFCS) county offices. We visited program coaches and other stakeholders in metropolitan Atlanta and Macon, Georgia—the two geographic areas in which the COACHES program was fully operational at the time of our visit.

Table 1. Amerigroup: COACHES characteristics at a glance

Program characteristic	Description
Purpose	The COACHES program connects youths who are about to transition out of foster care with a coach who teaches them to access, coordinate, and manage health and social services independently.
Components	<ul style="list-style-type: none"> • Patient and family engagement (primary) • Care management services (primary) • Outpatient care coordination (primary)
Target population	Youths who have the following characteristics: <ul style="list-style-type: none"> • In foster care for 12 months or longer^a • 17 to 20 years old • Documented history of behavioral health needs • Reside in participating counties
Theory of change/theory of action	Amerigroup hypothesizes that youths who work closely with a coach will better understand what services they need and how to access them. The knowledge gained from this relationship, in turn, will result in better health and social outcomes and lower costs.
Payment model	<ul style="list-style-type: none"> • Amerigroup is currently providing bundled payments to Families First. • Amerigroup plans to transition to a value-based purchasing arrangement to cover services provided under the COACHES program over the course of the cooperative agreement.
Award amount	\$5,833,492
Launch date ^b	3/1/2015
Setting	<ul style="list-style-type: none"> • Community-based • Home-based
Market area	<ul style="list-style-type: none"> • Rural • Urban • Suburban
Market location	Georgia (Bartow, Bibb, Carroll, Cherokee, Clayton, Cobb, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Muscogee, Paulding, and Rockdale counties)
Core outcomes	<ul style="list-style-type: none"> • Improved health literacy and ability to navigate the health care system • Increased use of primary care and preventive services • Improved educational attainment and increased employment • Improved connections to peer and adult social supports • Improved life skills (including renting an apartment and household budgeting) • Increased knowledge of legal and juvenile justice systems • Decreased overall cost of care for high-risk foster care youth

^aAmerigroup initially targeted only youths in foster care who resided in group homes. Through two waves of eligibility expansions, Amerigroup opened the program to youths who are enrolled in an ILP or who reside with foster families.

^bAfter a planning period, the awardee's program became operational as of this date.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved interrater reliability on coding; and applied codes to identify the program components, research questions, and concepts that describe the implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review, the evaluation team synthesized the material into this report on Amerigroup's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Despite initial challenges, implementation of the COACHES program went reasonably smoothly during the first year. In particular, coaches appear to be successfully engaging youths in the program and helping them manage and take responsibility for accessing needed services. However, as discussed below, coaches continue to face challenges helping youths coordinate outpatient health care and social services due, in part, to the limited engagement of DFCS caseworkers with the program.

Strong team cohesion and the flexibility of COACHES staff facilitated program implementation.

Members of the COACHES staff—from the coaches to the executive leaders at both Amerigroup and Families First—believe strongly in the program's potential benefits and appear committed to its success. Moreover, staff at all levels described the goals of the program and the key strategies employed by the program in the same way. In addition, Amerigroup and Families First are very open to adapting the program as needed to help ensure its success. This flexibility has helped the program overcome several early challenges.

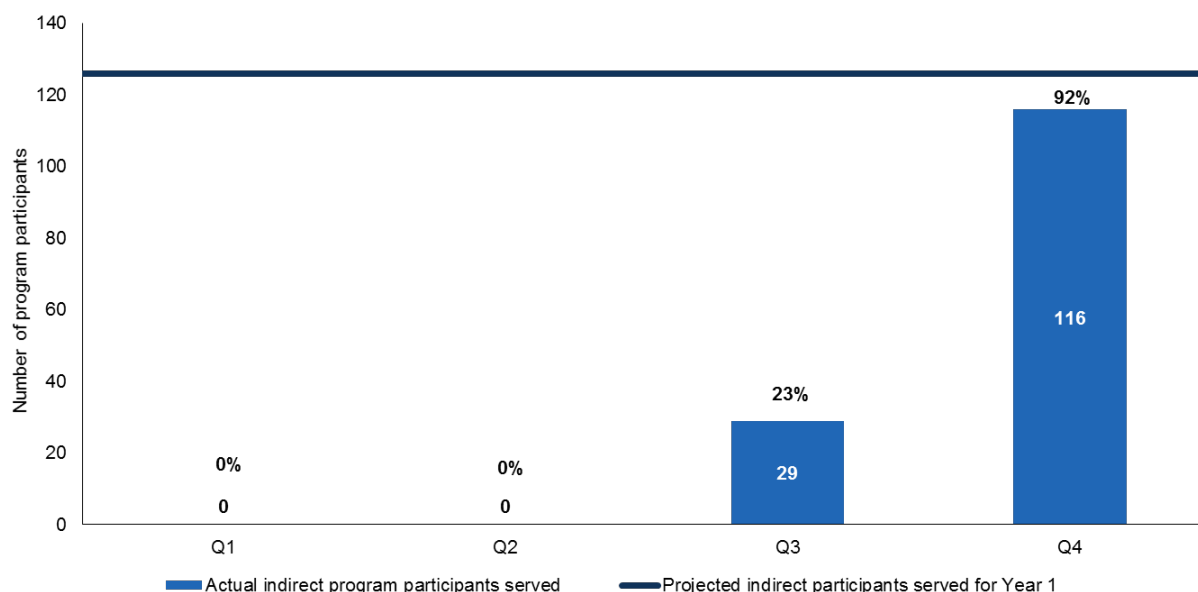
"I believe we all want the same outcome for the program. We're all trying to reach the same goal and we want the program to succeed. . . . I believe that if we're not getting the results that we want, we revamp and try something else. I feel like everybody has the same goal: to actually help the youth."

— Program coach

Most notably, the COACHES program overcame initial recruitment barriers and enrolled close to the targeted number of participants during the first program year (Figure 1). To reach the enrollment target, Amerigroup and Families First shifted their participant recruitment strategy and expanded their eligibility criteria. Initially, Amerigroup and Families First anticipated receiving a large number of referrals from DFCS staff. However, due in part to competing demands, DFCS caseworkers were largely unengaged with the project and have referred far fewer youths to the program than Amerigroup anticipated. As a result, Amerigroup and Families First started to advertise the COACHES program directly to potential participants during events and meetings attended by foster care youths. The COACHES program has found this shift in strategy to be very effective; approximately 60 percent of COACHES participants in the first year self-referred to the program.

In addition to easing the recruitment challenges, Amerigroup’s eligibility expansions allowed the program to reach additional youths whom DFCS stakeholders indicated could benefit from the program. Initially, only youths who resided in a group home within a six-county area were eligible to participate. The COACHES program was first expanded to serve ILP-enrolled youths, then youths in 11 additional counties, and finally youths living with foster families. As of November 2015, Amerigroup had proposed further geographic expansions and was waiting for the Centers for Medicare & Medicaid Services (CMS) to approve those changes.

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014–August 2015.

Note: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter. Amerigroup does not have direct program participants.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

a. Primary component: patient and family engagement

Program staff at Amerigroup and Families First, as well as other stakeholders who work with foster care youths, identified the youth-directed nature of COACHES as the most innovative component of the program.

Unlike many other programs for foster care youths, participation in COACHES is voluntary. That means the youths determine the frequency with which they meet with their coaches and the focus of their work together. Through their meetings, coaches educate youths about the health care and social services systems, help them build life skills, and support them as they advocate for their own needs. The success that Amerigroup

“We have an opportunity to dialog with young people in a way that’s not normally done. We are giving them the advocacy skills and empowerment to make decisions for themselves. . . . If you want to change an outcome, you have to change the process. . . . [This program is exciting] because I know that some of the seeds that we’re planting and some of the skills that youth are building are really going to impact them lifelong. Just knowing that I get to be a part of something that is new and innovative [is very exciting].”

— Program coach

and Families First have had with this component is illustrated by the large number of youths who self-referred to the COACHES program, as well as the program’s reportedly high retention rate.¹

Several factors facilitated the coaches’ ability to engage youths in the program and to encourage them to take more responsibility for their health and social service needs. First, COACHES staff and DFCS stakeholders indicated that the fact that the program is youth-directed motivates foster care youths—who often live highly scheduled and managed lives—to actively engage with the program. Second, DFCS stakeholders reported that coaches’ excitement about and commitment to the program is evident to the youths who, in turn, became enthusiastic about and invested in the program. Third, prior to working with the youths, coaches receive about 100 hours of in-person training on evidence-based strategies, including techniques for motivational interviewing and tools based on the Transition to Independence Process Model. Most coaches indicated that these trainings were extremely useful—providing them with the skills needed to encourage participants to take control of their service needs without explicitly directing them how to do so.

¹ During our site visits, COACHES staff reported a high retention rate in the program but did not provide data on the reasons for discharge. Following the period of performance for this report, Amerigroup provided additional details on discharges in self-reports it submitted to the implementation and monitoring contractor on performance between September and November 2015. Of the 30 youth who had been discharged from the program, 19 were no longer eligible for services (15 elected to leave the foster care program and 4 were no longer in the program catchment area).

Although universally viewed as a program strength, the youth-directed nature of the program also gives rise to several barriers.

Most commonly, COACHES staff indicated that retention in the program can be challenging because young adults often elect to leave the foster care program when they turn 18. When they exit foster care, they are no longer eligible for the COACHES program or for other health, education, and employment supports available through foster care. To discourage their disenrollment, coaches educate participants on the benefits of remaining in care. Several COACHES staff felt expanding the program's eligibility criteria to include youth ages 15 or 16 would provide them more time to discourage disenrollment. Amerigroup's initial HCIA R2 application included this population but, following CMS's application review and negotiations process, Amerigroup narrowed its focus to older youth who typically have less programming available.

Coaches also indicated that giving youth increasing responsibility for scheduling and remembering their own appointments gave rise to several challenges. For instance, many participants are either frequently late to meetings with their coaches or they miss the meetings entirely. To address this, coaches are trying different strategies to help them to manage their time more effectively. One coach started showing participants how to use the calendar feature on their cell phones to remind them about upcoming appointments.

Moreover, participants often preferred to meet with their coaches after normal working hours or on weekends. Program leaders recognized that this demanding schedule—as well as the emotional strain of working with a high-needs population—could be taxing for their staff. As a result, coaches can adjust their hours (for example, come in late or take off a weekday) if they work outside normal business hours. In addition, coaches' supervisors stress self-care and peer-to-peer support during supervisory meetings. In our interviews, coaches lauded this flexibility and support and indicated that it contributed to their job dedication.

b. Primary component: care management

The care management and youth engagement components of the COACHES program are closely interrelated. Coaches are not responsible for managing health and social services for

"We're not holding your hand, we're not doing the [program] course for you, but we can kind of guide you through. Even if you do still step on a land mine, we can guide you through so that you can still finish successfully."

—Program coach

participants but they are charged with helping participants manage them. When a youth participant first enrolls in the program, a coach completes a series of standardized psychosocial and trauma assessments to better understand his or her strengths and needs. The youth and coach

then work together to develop a plan that lays out the steps that the youth can take to meet medical, educational, and social goals. The initial coaching skills plan can take several weeks to develop. Participants receive a copy of the plan and work with their coach to implement and update it.

Many of the same factors that facilitated youth engagement in the program, including staff devotion and staff training in motivational interviewing, also facilitated the development of coaching skills plans. Coaches also indicated that the psychosocial assessments they complete with the youths help them to understand participants' needs and to build rapport with them. Additionally, coaches reported that technology facilitates assessment completion and skills plan development. Each coach has a tablet computer in order to complete electronic assessments, review assessment results, and update coaching skills plans while in the field.

Still, some coaches reported that it was difficult to encourage participants to develop comprehensive skills plans and maintain the program's youth-directed orientation. In addition to the coaching skills plan, participants in the COACHES program have at least one service plan (and often several) developed by other providers, such as a DFCS caseworker, a group home staff member, or a school counselor. Although these plans are reportedly more prescriptive and developed with less youth involvement than the coaching skills plans, COACHES staff indicated that the plans address important service needs and goals. Ideally, the coaching skills plan should include youth-directed strategies for addressing goals identified by the youth as well as by their service providers. Although some COACHES indicated that they draw on their training to encourage participants to develop comprehensive plans, others described being more prescriptive with participants. Some coaches also said that some of the youths' plans remain incomplete because they are working toward goals in one service area (such as employment) and have not yet developed plans for reaching goals in other areas.

c. Primary component: outpatient care coordination

The COACHES program is intended to help youths coordinate the services they receive from various medical and behavioral health providers, child service agencies, and community organizations. To do so, coaches aim to meet regularly with the youths, their service providers, and informal supports (such as religious leaders or family members). The COACHES program initially intended to establish its own meetings. However, to avoid duplicating services, COACHES staff decided to coordinate with DFCS staff to attend DFCS-established family team meetings. To encourage collaboration, COACHES leaders frequently reach out to various service providers to educate them on the program, seek their feedback on implementation, and encourage their involvement in care coordination.

However, despite ongoing outreach efforts, DFCS caseworkers have generally not engaged with the program. Although

COACHES and DFCS leaders reportedly have a collaborative relationship, frontline coaches have faced significant challenges coordinating with DFCS caseworkers. As a result, the coaches have attended only a few family team meetings for a handful of enrolled youths. Program staff speculated that the challenging and taxing nature of DFCS caseworkers' daily jobs limits their capacity to

"We try to make sure that we're not contradicting a plan that's already in place for [participating youth] and that we're supporting [those other plans]. That can be difficult to do. It is one of those barriers that comes up when you can't get in touch with the [DFCS] caseworkers."

— Program coach

actively engage with the COACHES program. As a result, coaches have had few opportunities to help participants coordinate their service plans across multiple agencies and settings. In most cases, the coaches have simply shared the coaching skills plans with other service providers without having the opportunity to discuss them. Moving forward, COACHES leaders will continue to hold information sessions and meetings for DFCS caseworkers in hopes of increasing their participation.

Although cross-agency care coordination has been limited, the coaches have developed collaborative relationships with a few providers. In general, COACHES have successfully engaged Amerigroup care coordinators, who are assigned to all youths in foster care to help them understand their health insurance benefits and connect them with health care providers. Together, the COACHES and Amerigroup care coordinators, help support participants as they work toward health-related goals. In addition, the coaches have a positive working relationship with some group home and ILP program staff. In particular, child services staff in rural areas have been excited to work with the COACHES program because, compared with Atlanta, few supports for foster care youths exist in rural areas. The coaches highlighted several benefits of working closely with other providers. For example, the coaches have encouraged some group home staff (who normally manage all appointments for residents) to allow participants more freedom to manage their own service needs.

3. How does the awardee make decisions about program-related changes?

Families First used its electronic record system, CareLogic, to collect a considerable amount of data on program implementation during the first program year. During the first few months of the program, Families First evaluation staff adapted the system to ease data entry and report production. Coaches use the system to record a range of information on their interactions with participants including the frequency of meetings, the types of assessments completed, and the number and type of participant referrals to community-based services. In addition, youths also routinely complete program satisfaction surveys and assessments to measure outcomes, including changes in life skills, health literacy, and mental health.

COACHES leaders use this information to assess participants' needs, the extent to which coaches complete assessments and develop coaching skills plans in a timely manner, as well as to identify coaches' additional training needs. However, program data were not regularly provided to the coaches or their supervisors. Instead, quality improvement efforts in the first program year were fairly informal and largely consisted of monthly check-in meetings between coaches and their supervisors. Coaches valued these meetings as an opportunity to receive guidance on their work with participants and to provide feedback on the program to their supervisors. Coaches uniformly felt that program leaders were interested in their feedback on the program and that they implemented suggested changes—such as strategies to improve recruitment efforts—when feasible.

Similarly, the COACHES program leaders used meetings with group home, ILP, and DFCS staff to gain stakeholder feedback on the program. Most stakeholders interviewed

knew whom to contact if they had an issue with program implementation and felt that program leaders would be responsive to their concerns. For example, Amerigroup's decision to expand the program's eligibility criteria to include ILP-enrolled youth was a direct result of stakeholder feedback on which youths would most benefit from the program. (The group home, ILP program, and other DFCS staff interviewed during our site visit were generally more engaged with the program than stakeholders who did not respond to requests for interviews.)

Moving forward, COACHES leaders expect to implement more formal quality monitoring and reporting processes. For example, they may provide coaches or their supervisors with feedback reports that draw on CareLogic data. In addition, program leaders may start directly observing coaches' interactions with the youths to assess program fidelity and identify coaches' additional training needs. Moreover, COACHES leaders plan to start using Medicaid claims data to assess program outcomes and guide program adaptations during the program's second year.

4. To what extent has the awardee begun to plan for or implement payment reforms?

Amerigroup is currently providing bundled payments to Families First for services provided under the COACHES program. Amerigroup indicated that it needs additional information on how the program is impacting cost and quality prior to refining the payment methodology. Amerigroup expects to start assessing program outcomes in late 2015 or early 2016. The refined payment arrangement may include incentive payments, through which Families First would share in the savings realized under the program if the organization achieves the desired health and social service improvements.

Amerigroup's intent is that the payment model developed by the end of the three-year project period will be actuarially sound—making the COACHES program marketable to child service agencies following the cooperative agreement period. However, Amerigroup may face challenges demonstrating impacts from the COACHES implementation, especially in regard to health care quality improvement or cost savings. Thus far, many of the participants have self-referred to the program. Coaches indicated that many participants are relatively high functioning and, moreover, are mostly focused on goals that are not health-related. As a result, program benefits, if realized, may accrue to child service agencies other than Medicaid. Therefore, Amerigroup leaders are considering seeking long-term financial support from multiple agencies, including Medicaid and DFCS.

D. Impact evaluability assessment

After reviewing Amerigroup's self-reports and conducting interviews with program staff, we concluded that a rigorous impact analysis of binary outcomes (for example, the likelihood of emergency department or primary care visits) may be feasible. If Amerigroup is able to enroll 300 participants—more than half of the eligible population—we will have sufficient statistical power to be able to detect effects of 20 percent for binary variables. However, even if Amerigroup reaches the recruitment goal of 720 youths, we will not have significant power to detect effects for any continuous outcomes (such as number of hospitalizations and associated costs).

E. Next steps

We look forward to continuing to work with Amerigroup for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include executing a business associate agreement and memorandum of understanding with Amerigroup. We will also discuss with Amerigroup whether it is possible to obtain data from other states. Then we will identify all Medicaid beneficiaries in the treatment group and construct a comparison group comprised of foster care youths in other states in which Amerigroup operates (such as Texas or Maryland)—and possibly in states where Amerigroup does not operate. We will produce initial impact estimates, depending upon data availability, after creating our outcome and explanatory variables. We will describe progress in obtaining data for Georgia, and possibly other states, as well as our impact findings in future reports.

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APPENDIX B.5

AVERA HEALTH

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REPORT

APPENDIX B.5

HCIA Round Two Evaluation: Avera Health

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–September 11, 2015)

Successes

- eLongTermCare (eLTC) leaders achieved their target of 30 long-term care facilities participating in the eLTC program after successfully installing mobile tele-health carts in each facility and resolving initial issues with poor Internet connectivity.
- Facility staff believe that the eLTC program is improving resident care by providing more timely, geriatric-focused care.

Challenges and strategies to address them

- Physician resistance to ceding their role in resident care reduces the likelihood that facilities will use eLTC services. eLTC leaders are investing more time in meeting with reluctant physicians, both in person and over the telephone. Primary care physicians (PCP) are often more willing to try eLTC's urgent care services rather than other services, since the former can reduce facilities' after-hours calls to PCPs and the need for PCPs to travel to facilities or send residents to the emergency department (ED). Once PCPs have tried eLTC urgent care services, they are then more willing to try eLTC's more comprehensive transitional care coordination service.
- The ingrained habits of the staff of long-term care facilities and the staff's fear of new technology have limited eLTC use and have been difficult to change. eLTC is making facility staff more comfortable with the equipment and tele-health visits by retraining staff and conducting more transitional care tele-health visits. Some facility administrators have encouraged staff to make greater use of eLTC services.

Lessons learned

- Identifying residents most likely to benefit from eLTC transitional care coordination visits requires consideration of several factors as well as further study.
- A higher-than-expected turnover rate in facility leaders has required eLTC to develop and execute a more formal and polished onboarding process for facilities, necessitating clear communication with all stakeholders regarding processes and expectations.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on September 11, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014 to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient

engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the eLongTermCare (eLTC) program, which is being implemented by Avera Health. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Avera's eLTC program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. In this narrative, we present findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a site visit from September 8 to 11, 2015, with eLTC leaders and three implementing sites; and a review of Avera reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Avera's eLTC program, we address four questions in this narrative:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
 3. How does the awardee make decisions about program-related changes?
 4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?
-

We also provide a brief summary of Avera's impact evaluability assessment and identify next steps in the evaluation.

A. Introduction

Avera, a nonprofit integrated health system, is implementing the eLTC program under its HCIA R2 cooperative agreement (Table 1). Avera consists of regional hospitals, critical care centers, and long-term care facilities across the Upper Midwest. Avera is partnering with the Evangelical Lutheran Good Samaritan Society, the largest nonprofit provider of senior care services in the country, and Golden Living Centers, a senior-focused health care company, to provide training and patient care services through a virtual, multidisciplinary, geriatric team for the staff and residents of 30 long-term care facilities across Iowa, Minnesota, Nebraska, and South Dakota. (In this document, we refer to the program under the HCIA R2 award and its leaders as eLTC and to the relevant long-term care facility residents as participants in the eLTC program.) Individuals admitted to or residing in any of the participating facilities are considered to be enrolled, although they are able to decline services. All enrolled participants are considered to be indirect participants because all facility staff who interact with residents receive training under the HCIA R2 award. However, some of the indirect participants are also considered to be direct participants because they receive tele-health services not covered under Medicare policy (for example, participants residing in urban areas or those in rural areas receiving more than one tele-health visit per month) and therefore receive eLTC services funded directly by the HCIA R2 award.¹

The program launched on November 1, 2014. eLTC leaders hypothesized that by relying on a geriatrician-led team to provide virtual health care services to residents of long-term care facilities and improving staff training, the program would better meet participants' medical needs and, in turn, reduce total costs, hospitalizations, and emergency department (ED) visits. For program participants at the 30 facilities, eLTC aims to reduce the following by August 2017: ED transfers and visits, by 28 percent; hospitalizations, by 16 percent; and total cost of care, by 8.25 percent.

The eLTC program has three main components, each of which eLTC leaders view as equally important.

1. **Tele-health consults** for either urgent or specialty care for participants in the 30 long-term care facilities. Facility staff are encouraged to call eLTC providers (located at Avera's central office in Sioux Falls, South Dakota, 24 hours a day, seven days a week) whenever a participant needs urgent medical care. eLTC providers then evaluate the participant via direct two-way audio and video. For example, for a participant who is experiencing breathing difficulties, eLTC providers evaluate the participant virtually and decide if the

¹ According to the implementation and monitoring contractor's instructions to the awardees on counting direct and indirect participants, it is possible for a participant to be classified as both direct and indirect and, thus, counted twice.

individual needs to be transferred to the ED or requires medication. If the tele-health encounter is for a non-urgent specialist consult, eLTC staff work with specialists to schedule tele-health visits. Specialists have the necessary telemedicine equipment in their offices. They may or may not be Avera providers.

2. **Tele-health transitional care coordination from hospital to long-term care facility.** After reviewing the medical records of newly admitted residents, eLTC staff determine participants' risk for either hospital readmission or an ED visit. High-risk participants receive a full geriatric evaluation and a tailored program referred to as an ePlan. The ePlan may include chronic disease management, the development of a schedule for how often the participant will be evaluated by video or telephone, and the creation of an eLTC staff-developed task list that facility staff will follow. For low-risk participants, eLTC providers review medication lists and provide any medication recommendations to the PCP or a facility nurse. In addition, they may provide an ePlan at the facility's request and conduct a video call with the participant.
3. **Quality improvement, referred to by eLTC leaders as staff training and empowerment.** Early in the program, eLTC provided support to facility staff both in person and via video as facilities adopted a quality improvement program called Interventions to Reduce Acute Care Transfers (INTERACT 4.0). INTERACT is a package of clinical and educational tools and algorithms that help the staff of long-term care facilities in the early identification and assessment of acute changes in the status of residents as well as in documentation and communication surrounding those changes (Interventions to Reduce Acute Care Transfers 2015; INTERACT Version 4.0 Tools; Ouslander et al. 2014). In addition, eLTC leaders are identifying other training topics for the bimonthly educational sessions that eLTC provides to all sites, based on program monitoring data and feedback from the staff of long-term care facilities. eLTC leadership reported that INTERACT is only a part of their planned quality improvement component.

The first two program components described above rely on mobile tele-health carts (Figure 1). At the beginning of the program, eLTC leaders conducted a one-hour training for facility staff in use of the mobile carts. Leaders retrain facility staff as needed. For tele-health urgent care consults, facility staff move the mobile cart to the participant's room before or after calling eLTC to request an urgent consult (consults generally take place within 20 minutes of facility staff contacting eLTC providers). For transitional care coordination services, eLTC staff first review the available medical information on newly admitted residents and then identify those at high risk for hospital readmission or an ED visit. Next, they request facility staff to set up tele-health visits with these high-risk residents and use the mobile cart at the scheduled time.

Table 1. Avera: eLTC characteristics at a glance

Program characteristic	Description
Purpose	<p>The program offers a set of geriatric care and tele-health services to residents and facility staff in long-term care facilities. Services are provided out of a centrally staffed telemedicine hub in Sioux Falls, South Dakota, and include:</p> <ul style="list-style-type: none"> • Building the assessment capability and toolkits of long-term care teams in participating facilities • Providing long-term care facility residents with routine and early access to goal-directed care, including urgent and specialty care • Improving management of care transitions • Supporting widespread use of INTERACT 4.0 tools and treatment algorithms and providing coaching to facility staff
Components	Telemedicine, transitional care coordination, and quality improvement (all primary components)
Target population	Individuals admitted to any of the 30 long-term care facilities participating in the program
Theory of change/theory of action	eLTC leaders hypothesized that, by providing virtual services to long-term care facilities and their residents, the program would better meet participants' medical needs and, in turn, reduce total costs, hospitalizations, and ED visits.
Payment model	<p>Shared savings</p> <p>Pay for implementation</p>
Award amount	\$8,827,572
Launch date ^a	November 1, 2014
Setting	Long-term care facilities (provider-based)
Market area	Rural, urban, suburban
Market location	Iowa, Minnesota, Nebraska, and South Dakota
Core outcomes	<p>By August 31, 2017:</p> <ul style="list-style-type: none"> • Reduce transfers and ED visits by 28 percent • Reduce hospitalizations by 16 percent • Reduce the total cost of care by 8.25 percent

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

We base our narrative on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by Avera to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with eLTC leaders and from in-person interviews with frontline and administrative staff during our site visit (September 7 through September 11, 2015). For the document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials. For the discussions, we scheduled in-person interviews with frontline and administrative staff and eLTC leaders during site visits. The purpose of the September 2015 site

visit to eLTC leaders at their office and three eLTC implementing sites was to collect detailed information on the experiences of eLTC leaders, facility staff, and other stakeholders in implementing the eLTC program; any changes to the program; and updates to the payment model.

Figure 1. eLTC's tele-health mobile cart



Source: Site visit conducted in September 2015.

Note: The primary devices on the mobile cart needed for tele-health consults are a poly-cam, handy-cam, stethoscope and headset, and screen.

We selected sites based on several factors, including the following:

- Organizational structure (that is, long-term care facilities' corporate affiliation)
- Diversity in experience with related Avera initiatives
- Size of facility
- Location (urban versus rural, two states)

We conducted our site visits from September 8 to September 10, 2015. We visited eLTC leaders in Sioux Falls, South Dakota, and then visited three participating long-term care facilities: Covington Heights in Sioux Falls, South Dakota (owned by Golden Living Centers; a larger facility in an urban area); Howard in Howard, South Dakota (owned by Good Samaritan Society; a smaller facility in a rural area); and Morningside Heights Care Center in Marshall, Minnesota (owned by Avera; a medium-sized facility in a rural area).

A two-person implementation team used semi-structured protocols to conduct the interviews. After obtaining consent from the interviewees, we audio-recorded and transcribed all interviews. A team member received coding training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The implementation team then extracted text pertaining to the research questions discussed below. Using the extracts and information from the document review as needed, the evaluation team synthesized the material into this report on eLTC's implementation experience.

C. Findings

1. How effectively has the program been implemented?

The program has been implemented according to its original timeline. eLTC leaders successfully equipped 30 facilities with mobile carts, addressed Internet connectivity issues, and trained staff in use of the equipment and services. eLTC leaders also provided support to all of the facilities in the adoption of INTERACT tools, enabling facility staff to improve care. However, the implementing sites are not using eLTC services as much as anticipated, which may affect the program's ability to reduce hospitalizations and ED visits.

Since the program was launched, eLTC leaders have made or contemplated several design changes to the program as follows:

- **Modifying the risk-stratification approach for identifying residents newly admitted to facilities who are at high risk for hospital readmission or ED visits.** eLTC initially used the LACE index,² a hospital-based tool, to risk-stratify residents. However, they found that the tool was not optimal for application in long-term care facilities. eLTC leaders are now adding other factors to use with LACE—such as resident functional status, disease burden, number of medications, and adequacy of pain control—in order to identify high-risk residents more effectively.

² LACE is a numeric index that measures risk of a resident's hospital readmission. The index is calculated from characteristics of the resident and his or her most recent hospitalization (van Walraven et al. 2010).

- **Reconsidering the original plan of risk-stratifying all longer-standing residents in long-term care facilities.** eLTC leaders found that many of the high-risk residents were eventually coming to their attention through the tele-health consults for urgent or specialty care, and they have thus far used this process to risk-stratify long-standing residents.
- **Considering expansion of the program to additional facilities.** The eLTC program has not expended all funds allocated for the first year of the cooperative agreement because the cost of upgrading facilities' wireless technology was less than projected. eLTC leaders planned to discuss with CMS the possibility of using the unexpended funds to expand their programs to additional sites beyond the 30 current sites. In addition, eLTC leaders want to expand beyond the facilities that are participating under the cooperative agreement, primarily to hospital-owned facilities and those under shared savings payment arrangements. The leaders hope to see a total of 60 to 90 facilities participating in the next two to three years.

According to reports prepared by the implementation and monitoring contractor, the eLTC program did not meet its enrollment goals for the first year (Figures 2a and 2b). For direct participants, the eLTC program met 40 percent of its target projection for the first year of the award, serving 633 direct participants. For indirect participants, the program was close to meeting its goal, serving 92 percent of its target projection for the first year, or 3,400 indirect participants. As explained further in Section C.2, enrollment is lower than projected because of technology issues at facilities that lead to later go-live dates, turnover among facility administrators, and difficulty changing facility staff habits—all of which delayed the use of eLTC services.

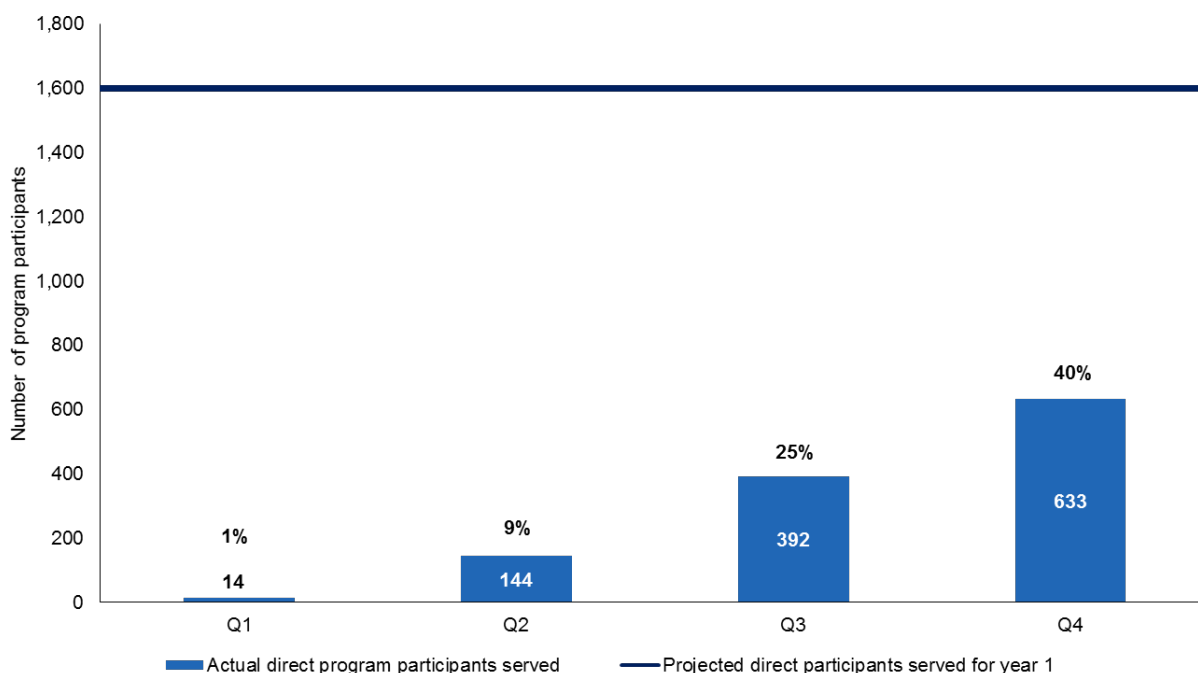
2. **What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?**
 - a. **Primary components: tele-health visits for (1) urgent and specialty care and (2) transitional care coordination services**

The program offers tele-health services for urgent and specialty care, as well as transitional care coordination services. Because these two components have some of the same facilitators and challenges, we discuss them in tandem, first describing facilitators and then challenges.

Respondents saw a clear need for tele-health services in long-term care facilities in order to improve quality of care. First, they valued the availability of urgent care services. Before the eLTC program, residents with urgent care needs often waited longer than desirable to receive care from their PCP, putting them at higher risk for poor outcomes and increasing the likelihood of avoidable hospital readmissions and ED visits. Facility staff reported that they had difficulty in drawing PCPs' timely attention to residents' needs, since most PCPs are busy seeing patients in their offices and often are not able to travel to participating facilities, which may be located some distance from their offices. The administrative director of one facility noted that some physicians see residents no more than once every 60 days.

Similarly, respondents valued the eLTC program’s proactive management of high-risk residents who had just arrived at the long-term care facility, noting that PCPs’ first visit to the resident often takes place several days after a resident arrives, missing the time at which the resident is often unstable. A couple of respondents, however, mentioned instances in which they questioned the necessity of transitional care visits. (At the outset of the program, not all residents whom eLTC program staff asked to see were necessarily high-risk residents, as eLTC leaders felt that visits with several low-risk residents would help facility staff engage with the program and become more comfortable using the mobile carts.)

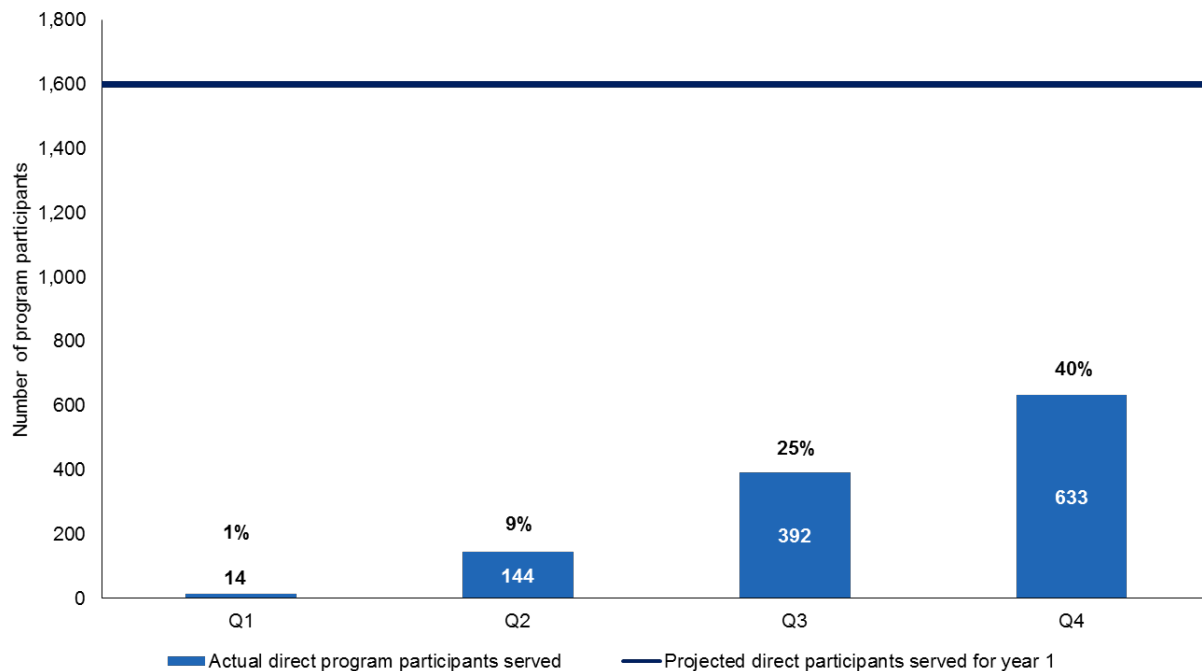
Figure 2a. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Note: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. While all enrolled program participants are considered to be indirect participants, some indirect participants are also direct participants because they receive services not covered under Medicare policy and therefore receive services funded directly by the HCIA R2 award.

Figure 2b. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. All enrolled program participants are considered to be indirect participants because all long-term facility staff who interact with residents receive training under the HCIA R2 award.

All of the direct participants for eLTC are also counted as indirect participants.

Facility staff find interacting with eLTC to be professionally empowering. One facility director noted that, in contrast to many of the regular PCPs, eLTC staff listen to nurses and treat them as care team partners. eLTC uses the stethoscope and headset on the mobile cart as a teaching tool for the nurses so that they can follow along with eLTC staff and contribute to the assessment. Two nurses from two facilities appreciated eLTC staff's ability to respond almost immediately to residents' needs, acknowledging that it is difficult to see residents in pain or decompensating as they await a PCP's response when the immediate delivery of care could address the situation.

Readmissions penalties and other value-based payment policies for hospitals have facilitated adoption of the eLTC program. Under Medicare's Hospital Readmissions Reduction Program, hospitals with excess readmissions face penalties and payment reductions. Hospitals have thus encouraged long-term care facilities to which they refer patients to help reduce the hospitals' readmission rates. Accordingly, the eLTC program's potential to help reduce readmission rates is an incentive for facilities to participate.

Facilities have largely overcome initial challenges in securing adequate Internet access and credentialing eLTC program staff. After the initial work to upgrade facilities' wireless and bandwidth with HCIA R2 funds and after the sites went live, eLTC staff discovered new problems with connectivity (for example, wireless dead zones). The problems required a second round of assessment and response but are now largely resolved. eLTC staff also addressed situations in which facilities' bylaws did not allow nurse practitioners and physician assistants to provide medical care to residents (and thus prevented such eLTC staff from delivering services to residents). The problem continued to plague three to five facilities, but eLTC staff were optimistic that the bylaws would soon be changed.

PCP buy-in varies by facility and program component and therefore is both a facilitator and a challenge. If PCPs do not buy into the eLTC program, facility staff are less likely to use eLTC services because doing so may undermine their relationships with PCPs. eLTC leaders reported that the majority of physicians buy into the program fully, a small number buy in but with reservations, and an even smaller number do not like the program at all. PCPs particularly like the urgent care services because they do not receive calls from facility staff (and potentially do not have to drive to the facility or hospital) late at night or on weekends. Some PCPs conditionally buy into the program. For example, some PCPs require facility staff to try to contact them first and then use eLTC only if they are unavailable.

"It's really nice that, at 3 o'clock in the morning, I'm not getting a phone call."

—PCP

Respondents noted that some PCPs view the eLTC program, particularly the transitional care coordination component, as a threat to their relationships with their patients. These PCPs see eLTC as potentially stealing their patients and thus reducing their income. In addition, two PCPs emphasized the importance of their long-standing relationships with their patients in delivering high quality care and expressed concern that the eLTC program undercuts this advantage. In general, respondents indicated that PCPs tend to be most resistant to the transitional care coordination component of eLTC's services because some perceive that it directly places the eLTC team in a central role in managing resident care. eLTC leadership report that, for some physicians, this perception changes with experience in the program.

Turnover among facility administrators delayed full implementation at some sites. eLTC leaders reported that, during the first year of program implementation, about half of the 30 facility administrators on staff at the program's outset had left their positions. eLTC leaders found that, if the facility administrators do not understand and buy into the program, it is not widely adopted by the rest of the staff.

“ . . . [Our] nurses have picked up the phone and called our on-call doctors and gotten orders for years and years and years. Trying to get them to use this program is difficult.”

—Facility director

Changing facility staff habits to adopt new workflows and use new technology is challenging.

Some facility staff reported that they often forget to use eLTC for urgent and specialty care. Respondents also noted that they were somewhat fearful of using the mobile cart because they were uncertain how to use it or worried that they might damage it. In addition, eLTC

leaders believe that facility staff often wait too long to call eLTC. Tele-health visits are most effective in reducing hospital readmissions, ED visits, and overall costs if tele-health providers are contacted before acute problems reach the point where they can no longer be handled in the facility. eLTC providers are trying to teach nurses not to batch several resident care issues into a single call when contacting busy off-site PCPs, as they have been trained to do.

Accessing patient records is a challenge because facilities do not reliably use their electronic medical records (EMRs), and eLTC providers do not have access to all facilities’ EMRs. eLTC providers prepare for all consults by reviewing a participant’s available medical information. Avera and Golden Living facilities do not use their EMRs fully, relying instead on a hybrid paper and EMR system. This arrangement requires eLTC staff to spend time tracking down records before a consult; when records cannot be found, the eLTC’s ability to deliver quality care at the point of resident interaction is compromised. In addition, although eLTC staff can view the Good Samaritan and Golden Living facilities’ EMRs, they cannot enter information into those EMRs. Accordingly, eLTC providers must engage in an administratively burdensome process of relying on fax transmission (and sometimes telephone and email) to communicate with facility staff and PCPs after the consult in order to document the interaction properly.

Many facilities struggled to provide data regularly to eLTC on newly admitted, readmitted, and discharged residents, making it difficult for eLTC staff to identify opportunities to intervene in resident care or to assess program effectiveness. Many facilities find it difficult to remember to provide this information, and, if they do provide it, they find the process administratively burdensome. If not notified about recent long-term care facility admissions, eLTC staff are unaware of the residents for whom they can provide transitional care coordination services. Further, without monthly information on transfers (referred to as transfer logs), eLTC leaders can neither determine whether any residents had avoidable hospitalizations or ED visits nor identify any patterns associated with these events. In turn, eLTC leaders are constrained in their ability to assess their effectiveness and identify ways to improve performance.

eLTC leaders are taking the following steps to address many of the more persistent challenges.

To increase PCP buy-in, eLTC leaders invested more time in meeting with reluctant physicians in-person and over the telephone; they also allowed flexibility in the adoption of program features. First, in addition to spending more time discussing the program with PCPs, eLTC staff commented that the program’s urgent care services, which eliminate the need for

facilities to call PCPs at inconvenient times to address acute-care problems, often induced PCPs to try the program. eLTC leaders found that, if they can convince PCPs to try eLTC just once or twice for urgent care, PCPs usually accept eLTC's transitional care services into the facility. Second, eLTC allowed flexibility in the adoption of program features. For example, eLTC leaders noted that a growing trend in long-term care facilities is to have a mid-level provider in house during regular business hours. eLTC leaders adopted this practice by asking facility staff to reach out to the on-site mid-level provider for resident care issues during the day and to eLTC staff at night and on weekends.

Facility administrators and nurse managers play pivotal roles in developing strategies to encourage staff to use eLTC services regularly. One facility administrator shared successful stories of eLTC use with facility staff to raise awareness of the program's benefits. He also described how nurse managers at the facility took a lead role in identifying opportunities to use eLTC, noting that the nurse managers dubbed the mobile cart "Polly" (for the cart's poly-cam) in an effort to increase staff awareness and acceptance of both the equipment and the program. For example, if a nurse on the floor starts to call the PCP and intends to send a resident to the ED, the nurse manager stops the nurse on the floor and asks the nurse if Polly can be used instead. Another facility administrator requires nurses to perform quick audio and video check-ins with eLTC staff as an "icebreaker" and to make sure that the nurses feel comfortable using the mobile cart. As mentioned, eLTC leaders conduct additional training sessions on using the mobile cart to encourage facility staff to use it.

"Well, hold on a minute. Is this something that we can use the eLTC screen for? . . . Let's go get Polly [named after the mobile cart's poly-cam]. Let's bring it in here and let's try to utilize that."

—Facility administrator

eLTC leaders are improving data collection and flow to reduce the burden on facility staff and increase data accuracy. eLTC is working to ensure the direct flow of all resident information—including hospital admission, discharge, and transfer (ADT) data—to eLTC via a web application that interfaces with facility EMRs. This automated process would replace the current process in which facility staff must notify eLTC of admissions and discharges via the transfer log. It would also reduce the work load and improve the accuracy of resident information. At the same time, eLTC leaders are exploring ways to work with the state health information exchange (HIE) to get more complete hospital record information. In addition, eLTC leaders worked with long-term care facility chains to enable a centralized reporting process in which the corporate office provides data directly to eLTC on behalf of all of its participating facilities.

b. Primary Component: quality improvement (staff empowerment)

eLTC's third program component is quality improvement. The INTERACT package forms a large part of this component, but it includes other elements as well. As of September 2015, eLTC was providing support to facilities in the adoption of INTERACT. For example, eLTC encourages facility staff to use the SBAR—situation, background, assessment,

recommendation—tool (described below) to report resident events to eLTC staff. eLTC also started to conduct separate web-based trainings for all facilities, the first on patient assessment (for example, assessing bowel sounds). eLTC leaders intend the separate trainings to complement the program’s tele-health services by helping to improve overall resident care. (Section C.3 describes the measures eLTC is using to identify care improvement opportunities.)

Facility staff identified the elements of INTERACT (listed below) that directly affected their workflow. During the site visits, staff noted that the tools are useful for keeping track of resident issues to ensure that nothing falls through the cracks. All facility staff are expected to be trained in these tools and encouraged to use them as communication devices. Family members may also use the tools. (The appendix provides detail on the tools.)

- SBAR tool (paper or electronic four-page form to record and report resident events such as falls and eating issues to eLTC staff, other facility staff, and the PCP)
- “Stop and Watch” (paper forms for all facility staff—including social workers, custodians, and dieticians—as well as visiting family and friends to report concerns about a resident to the nursing staff)
- Care paths (indicate symptoms to look for, next steps in the care process, and when to alert a PCP; it is important to note that only one nurse spoke of care paths, nurses at other facilities were unaware of this particular tool)

The SBAR tool was more likely than the “Stop and Watch” tool to be embraced as a useful technique for communication and, in some cases, was embedded in facilities’ EMRs. eLTC leaders noted that staff at many facilities were resistant to the adoption of INTERACT tools, and one facility administrator reported that staff found use of the SBAR tool to be time-consuming. However, several facility respondents indicated that the SBAR was a useful and systematic way to record and convey important information about resident events.

Facility staff reactions to the “Stop and Watch” tool were mixed. Staff in one facility, which had recently reemphasized the use of “Stop and Watch” forms, readily adopted the forms. One staff member indicated that she had completed three or four “Stop and Watches” before 8:00 a.m. on a particular day. In contrast, staff at other facilities found that it is easier to simply voice their concerns about a resident to a nurse or other facility staff. Administrators at two facilities acknowledged that they could improve their use of the “Stop and Watch” tool. One facility discards the forms after the nurse or other facility staff member reads them; in another facility, the administration attempts to compile the forms in a log.

3. How does the awardee make decisions about program-related changes?

To measure progress in reaching their program goals, eLTC leaders plan to collect a range of data from CMS:

- Total cost of care per beneficiary per month

- Total Medicare Part A and B cost
- Number of participants receiving advanced care planning
- Follow-up after hospitalization
- Number of participants with more than one ED visit in the last days of life
- ED visit rate
- Hospital readmission rate

eLTC leaders also collect the following data from facilities:

- Staff participation in training sessions offered by eLTC
- Participation in monthly calls on program updates and concerns
- The extent to which timely admission and discharge notifications are sent to eLTC
- The extent to which the transfer logs are sent to eLTC monthly
- The extent to which information on use of INTERACT tools is provided to eLTC
- Staff turnover in each participating facility
- Annual survey responses on satisfaction from facility staff and from residents and their families

As noted, the transfer log allows eLTC leaders to monitor whether the program is preventing hospitalizations and ED visits. The log informs eLTC leaders about which residents were admitted to a hospital, had observation stays or ED visits, and the reasons for the encounters. eLTC leaders then analyze these transfers to determine whether eLTC providers were involved in that resident's care. eLTC staff conduct monthly calls with facilities to review the reports, determine whether any of the transfers could have been avoided, and look for educational or training opportunities for the facilities. In addition, eLTC staff use the information to evaluate how they could have done things differently and to identify best practices.³

eLTC also collects data on the number and type of services it provides to each facility and is adopting new software to create dashboards that will more clearly allow review and comparison. eLTC uses the data as an indicator of which facilities could benefit from staff retraining and from telephone calls and visits by eLTC staff.

Avera initially planned to form three committees to guide the eLTC program: (1) a steering committee, (2) an advisory committee, and (3) a patient and family council. As of September

³ It is in the course of this analysis that eLTC staff realized that they were not reliably identifying the residents most likely to be readmitted and thus receive their transitional care coordination services; accordingly, they are modifying the risk-stratification method.

2015, the steering committee was meeting monthly but will eventually meet quarterly as implementation of the program progresses. The committee consists of representatives from Avera, long-term care facilities, and the Quality Improvement Organization or Medicaid in South Dakota. The steering committee conducts in-depth conversations about operations (for example, levels of facility engagement and strategies to increase buy-in). The advisory committee has nationwide representation and includes long-term care experts, regional payers, and a representative of the U.S. Senate. The committee helps identify program improvements and disseminate awareness of the program to a national audience. Finally, after experiencing difficulty in motivating residents and families to participate on the patient and family council, eLTC decided instead to request feedback from residents and family members at the conclusion of tele-health visits.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

Avera is using funds from its cooperative agreement to reward facilities for actively participating in the program. The criteria for these incentive payments include the extent to which a facility coordinates with eLTC on every admission to the facility, participates in training sessions, and submits required data. Starting in the second program year, facilities will pay a service fee to eLTC that could be covered by the incentive payment. By the third year, Avera will increase the service fee for low-performing facilities.

To increase facility engagement with eLTC, eLTC leaders relaxed some of the Year 1 performance criteria, making more facilities eligible for incentive payments, which can range from \$20,000 to \$50,000 depending on facility size. The Year 2 criteria include more stringent compliance standards. eLTC leaders hope that facilities that received a payment in Year 1 will be motivated to avoid the loss of the additional revenue represented by the incentive in Year 2 and thus increase their commitment to the program. The payment compensates for and encourages facilities to devote personnel time to eLTC (collecting and reporting transfer log data, faxing information, and setting up on-camera transition visits).

Facility staff embrace the incentive payments. One facility had not yet received a payment but felt that the incentive payment was appropriate given the time that staff are expected to spend on the project. Another facility that had received an incentive payment was pleasantly surprised by the size of the payment. Facilities appear to vary in the degree of discretion they exercise in use of the incentive payments; in some cases, corporate offices may have considerable say. One administrator thought that the facility would have participated in the program regardless of the availability of incentive payments.

In thinking about a longer-term payment strategy, eLTC leaders noted that most long-term care facilities do not have the resources to pay for the services that eLTC is now providing under the cooperative agreement. However, to the extent that facilities become part of an accountable care organization (ACO), or if a care management fee is available, facilities will then have the resources to pay for these services. Avera is applying to the Center for Medicare & Medicaid

Innovation's (CMMI) Advanced Investment Model ACO initiative. In addition, Avera anticipates that the eLTC program will mitigate reductions to reimbursement through CMS value-based purchasing and bundled payment models. In its application for the HCIA R2 award, Avera proposed various other payment ideas, including sharing savings and losses with CMS, but these ideas have not yet been implemented.

D. Impact evaluability assessment

After reviewing the information in program documents and considering the interviews with program staff, we conclude that a rigorous impact analysis is feasible. We will use a difference-in-differences design that will allow us to compare outcomes for beneficiaries who reside in participating long-term care facilities to beneficiaries who reside in nonparticipating facilities; we will identify the latter through a propensity score analysis. Although the primary analysis will include all residents at participating and nonparticipating facilities, we will also conduct two subgroup analyses to examine impacts on short-stay and long-stay residents, and on beneficiaries classified as being at high risk for hospital readmission.

E. Next steps

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include identifying all Medicare and Medicaid beneficiaries who visit long-term care facilities assigned to the treatment and comparison groups. We will then attribute these beneficiaries to one group or the other, comparing baseline characteristics across the two groups and determining how well the groups match. Once we are confident that we have matched treatment facilities to comparable comparison facilities, we will produce—depending on data availability—initial impact estimates for the first one to two quarters of program operations after creating our outcome and explanatory variables.

F. Supplemental Materials

This section contains supplemental materials mentioned throughout this narrative and provided by the awardee.

SBAR Communication Form

and Progress Note for RNs/LPN/LVNs



Before Calling the Physician / NP / PA / other Healthcare Professional:

- ☐ **Evaluate the Resident:** Complete relevant aspects of the SBAR form below
- ☐ **Check Vital Signs:** BP, pulse, and/or apical heart rate, temperature, respiratory rate, O₂ saturation and finger stick glucose for diabetics
- ☐ **Review Record:** Recent progress notes, labs, medications, other orders
- ☐ **Review an INTERACT Care Path or Acute Change in Condition File Card,** if indicated
- ☐ **Have Relevant Information Available when Reporting**
(i.e. medical record, vital signs, advance directives such as DNR and other care limiting orders, allergies, medication list)

SITUATION

The change in condition, symptoms, or signs observed and evaluated is/are _____

This started on ____ / ____ / ____ Since this started it has gotten: ☐ Worse ☐ Better ☐ Stayed the same

Things that make the condition or symptom **worse** are _____

Things that make the condition or symptom **better** are _____

This condition, symptom, or sign has occurred before: ☐ Yes ☐ No

Treatment for last episode (if applicable) _____

Other relevant information _____

BACKGROUND

Resident Description

This resident is in the facility for: ☐ Long-Term Care ☐ Post Acute Care ☐ Other: _____

Primary diagnoses _____

Other pertinent history (e.g. medical diagnosis of CHF, DM, COPD) _____

Medication Alerts

☐ Changes in the last week (describe) _____

☐ Resident is on (Warfarin/Coumadin) Result of last INR: _____ Date ____ / ____ / ____

☐ Resident is on other anticoagulant (direct thrombin inhibitor or platelet inhibitor)

Resident is on: ☐ Hypoglycemic medication(s) / Insulin ☐ Digoxin

Allergies _____

Vital Signs

BP _____ Pulse _____ (or Apical HR _____) RR _____ Temp _____ Weight _____ lbs (date ____ / ____ / ____)

For CHF, edema, or weight loss: last weight before the current one was _____ on ____ / ____ / ____

Pulse Oximetry (if indicated) _____ % on ☐ Room Air ☐ O₂ (_____)

Blood Sugar (Diabetics) _____

Resident / Patient Name _____ (continued)

SBAR Communication Form

and Progress Note for RNs/LPN/LVNs (cont'd)



Resident Evaluation

Note: Except for Mental and Functional Status evaluations, if the item is not relevant to the change in condition check the box for "not clinically applicable to the change in condition being reported".

1. Mental Status Evaluation (compared to baseline; check all that you observe)

- | | | |
|---|---|--|
| <input type="checkbox"/> Decreased level of consciousness (sleepy, lethargic) | <input type="checkbox"/> New or worsened delusions or hallucinations | <input type="checkbox"/> Other (describe) |
| <input type="checkbox"/> Increased confusion or disorientation | <input type="checkbox"/> Other symptoms or signs of delirium (e.g. inability to pay attention, disorganized thinking) | <input type="checkbox"/> No changes observed |
| <input type="checkbox"/> Memory loss (new or worsening) | <input type="checkbox"/> Unresponsiveness | |

Describe symptoms or signs _____

2. Functional Status Evaluation (compared to baseline; check all that you observe)

- | | | |
|--|--|--|
| <input type="checkbox"/> Decreased mobility | <input type="checkbox"/> Swallowing difficulty | <input type="checkbox"/> Other (describe) |
| <input type="checkbox"/> Needs more assistance with ADLs | <input type="checkbox"/> Weakness (general) | <input type="checkbox"/> No changes observed |
| <input type="checkbox"/> Falls (one or more) | | |

Describe symptoms or signs _____

3. Behavioral Evaluation

- | | | |
|--|--|--|
| <input type="checkbox"/> Danger to self or others | <input type="checkbox"/> Suicide potential | <input type="checkbox"/> Personality change |
| <input type="checkbox"/> Depression (crying, hopelessness, not eating) | <input type="checkbox"/> Verbal aggression | <input type="checkbox"/> Other behavioral changes (describe) |
| <input type="checkbox"/> Social withdrawal (isolation, apathy) | <input type="checkbox"/> Physical aggression | <input type="checkbox"/> No changes observed |

Describe symptoms or signs _____

☐ Not clinically applicable to the change in condition being reported

4. Respiratory Evaluation

- | | | |
|---|---|---|
| <input type="checkbox"/> Abnormal lung sounds (rales, rhonchi, wheezing) | <input type="checkbox"/> Inability to eat or sleep due to SOB | <input type="checkbox"/> Symptoms of common cold |
| <input type="checkbox"/> Asthma (with wheezing) | <input type="checkbox"/> Labored or rapid breathing | <input type="checkbox"/> Other respiratory changes (describe) |
| <input type="checkbox"/> Cough (<input type="checkbox"/> Non-productive <input type="checkbox"/> Productive) | <input type="checkbox"/> Shortness of breath | <input type="checkbox"/> No changes observed |

Describe symptoms or signs _____

☐ Not clinically applicable to the change in condition being reported

5. Cardiovascular Evaluation

- | | | |
|---|--|--|
| <input type="checkbox"/> Chest pain/tightness | <input type="checkbox"/> Irregular pulse (new) | <input type="checkbox"/> Other (describe) |
| <input type="checkbox"/> Edema | <input type="checkbox"/> Resting pulse >100 or <50 | <input type="checkbox"/> No changes observed |
| <input type="checkbox"/> Inability to stand without severe dizziness or lightheadedness | | |

Describe symptoms or signs _____

☐ Not clinically applicable to the change in condition being reported

6. Abdominal / GI Evaluation

- | | | |
|---|--|---|
| <input type="checkbox"/> Abdominal pain | <input type="checkbox"/> Distended abdomen | <input type="checkbox"/> Jaundice |
| <input type="checkbox"/> Abdominal tenderness | <input type="checkbox"/> Decreased appetite/fluid intake | <input type="checkbox"/> Nausea and/or vomiting |
| <input type="checkbox"/> Constipation
(date of last BM ____ / ____ / ____) | <input type="checkbox"/> Diarrhea | <input type="checkbox"/> Other (describe) |
| <input type="checkbox"/> Decreased/absent bowel sounds | <input type="checkbox"/> GI Bleeding (blood in stool or vomitus) | <input type="checkbox"/> No changes observed |
| | <input type="checkbox"/> Hyperactive bowel sounds | |

Describe symptoms or signs _____

☐ Not clinically applicable to the change in condition being reported

Resident/Patient Name _____

(continued)

SBAR Communication Form

and Progress Note for RNs/LPN/LVNs (cont'd)



7. GU/Urine Evaluation

- | | | |
|---|--|--|
| <input type="checkbox"/> Blood in urine | <input type="checkbox"/> New or worsening incontinence | <input type="checkbox"/> Other (describe) |
| <input type="checkbox"/> Decreased urine output | <input type="checkbox"/> Painful urination | <input type="checkbox"/> No changes observed |
| <input type="checkbox"/> Lower abdominal pain or tenderness | <input type="checkbox"/> Urinating more frequently or urgency with or without other urinary symptoms | |

Describe symptoms or signs _____
☐ Not clinically applicable to the change in condition being reported

8. Skin Evaluation

- | | | |
|--|---|--|
| <input type="checkbox"/> Abrasion | <input type="checkbox"/> Itching | <input type="checkbox"/> Skin tear |
| <input type="checkbox"/> Blister | <input type="checkbox"/> Laceration | <input type="checkbox"/> Splinter/sliver |
| <input type="checkbox"/> Burn | <input type="checkbox"/> Pressure ulcer | <input type="checkbox"/> Wound (describe) |
| <input type="checkbox"/> Contusion | <input type="checkbox"/> Puncture | <input type="checkbox"/> Other (describe) |
| <input type="checkbox"/> Discoloration | <input type="checkbox"/> Rash | <input type="checkbox"/> No changes observed |

Describe symptoms or signs _____
☐ Not clinically applicable to the change in condition being reported

9. Pain Evaluation

Does the resident have pain?

- ☐ No ☐ Yes (describe below)

Is the pain?

- ☐ New ☐ Worsening of chronic pain

Description/location of pain: _____

Intensity of Pain (rate on scale of 1-10, with 10 being the worst): _____

Does the resident show non-verbal signs of pain (for residents with dementia)?

- ☐ No ☐ Yes (describe) _____
 (restless, pacing, grimacing, new change in behavior)

Other information about the pain _____
☐ Not clinically applicable to the change in condition being reported

10. Neurological Evaluation

- | | | |
|---|--|---|
| <input type="checkbox"/> Abnormal Speech | <input type="checkbox"/> Seizure | <input type="checkbox"/> Other neurological symptoms (describe) |
| <input type="checkbox"/> Decreased level of consciousness | <input type="checkbox"/> Weakness or hemiparesis | <input type="checkbox"/> No changes observed |
| <input type="checkbox"/> Dizziness or unsteadiness | | |

Describe symptoms or signs _____
☐ Not clinically applicable to the change in condition being reported

Advance Care Planning Information (the resident has orders for the following advanced care planning)

- ☐ Full Code ☐ DNR ☐ DNI (Do Not Intubate) ☐ DNH (Do Not Hospitalize) ☐ No Enteral Feeding ☐ Other Order or Living Will (specify)

Other resident or family preferences for care _____

Resident/Patient Name _____ (continued)

SBAR Communication Form

and Progress Note for RNs/LPN/LVNs (cont'd)



APPEARANCE

Summarize your observations and evaluation: _____

REVIEW AND NOTIFY

Primary Care Clinician Notified: _____ Date ____/____/____ Time (am/pm) _____

Recommendations of Primary Clinicians (if any) _____

b. Check all that apply

Testing

- ☐ Blood tests
- ☐ EKG
- ☐ Urinalysis and/or culture

- ☐ Venous doppler
- ☐ X-ray
- ☐ Other (describe) _____

Interventions

- ☐ New or change in medication(s)
- ☐ IV or subcutaneous fluids

- ☐ Increase oral fluids
- ☐ Oxygen (if available)
- ☐ Other (describe) _____

- ☐ Transfer to the hospital (non-emergency) (send a copy of this form)
- ☐ Call for 911
- ☐ Emergency medical transport

Nursing Notes (for additional information on the Change in Condition)

Name of Family/Health Care Agent Notified: _____ Date ____/____/____ Time (am/pm) _____

Staff Name (RN/LPN/LVN) and Signature _____

Resident/Patient Name _____

Stop and Watch Early Warning Tool



If you have identified a change while caring for or observing a resident, please **circle** the change and notify a nurse. Either give the nurse a copy of this tool or review it with her/him as soon as you can.

S T O P a n d W A T C H	Seems different than usual
	Talks or communicates less
	Overall needs more help
	Pain – new or worsening; Participated less in activities
	Ate less
	No bowel movement in 3 days; or diarrhea
	Drank less
	Weight change
	Agitated or nervous more than usual
	Tired, weak, confused, or drowsy
Change in skin color or condition	
Help with walking, transferring, toileting more than usual	

☐ Check here if no change noted while monitoring high risk patient

Patient / Resident

Your Name

Reported to

Date and Time (am/pm)

Nurse Response

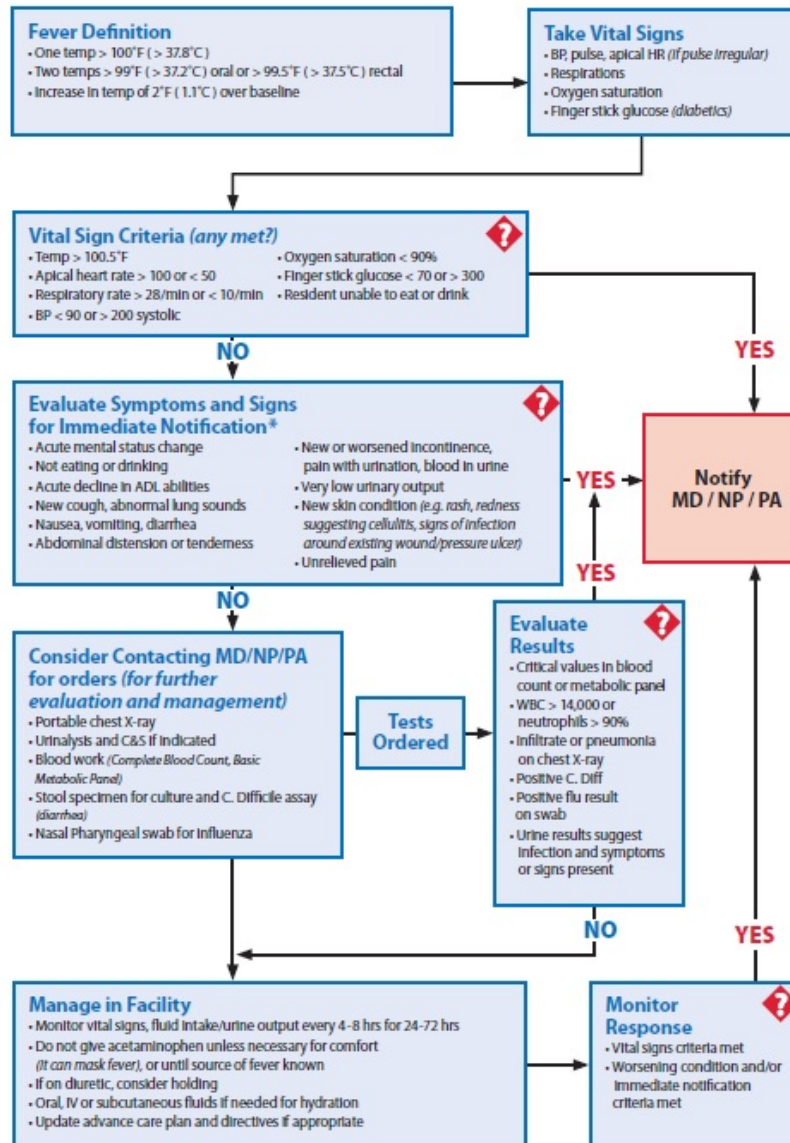
Date and Time (am/pm)

Nurse's Name

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CARE PATH

Fever



* Refer also to other INTERACT Care Paths as Indicated by symptoms and signs

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APPENDIX B.6

BOSTON MEDICAL CENTER

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REPORT

APPENDIX B.6

HCIA Round Two Evaluation: Boston Medical Center

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 29, 2015)

Successes

- To meet enrollment goals, program staff have been using multiple approaches to raise awareness of the program's services among providers and families in the Baystate Medical Center and Boston Medical Center communities. As a result, they have developed partnerships with numerous providers who, because they perceive benefits in the program, are referring patients and their families.
- To meet the myriad needs of participants and their families, program leaders as well as frontline and administrative staff emphasized the importance of being part of a team of self-motivated individuals with professional expertise and a commitment to the population served by the program. In addition, constant communication among leaders and frontline and administrative staff supports the teamwork necessary to meet the needs of participants and their families.
- Program staff believe there are a number of benefits to maintaining participants' care plans in a secure, cloud-based, Internet portal known as ACT.md.

Challenges and strategies to address them

- The initial two-hour multidisciplinary assessment appointments do not give program staff enough time to gather the necessary information from participants and families. Strategies to overcome this include scheduling pre-intake meetings with families and then meeting with participants and families in pairs—instead of as an entire care team—during the appointment.
- Despite the comprehensive information in a participant's care plan, families and providers outside the program are generally not accessing it. In addition, the care plan platform is not integrated with the electronic medical record. Program staff are working with the vendor to customize and simplify the care plan and make it more user-friendly.

Lessons learned

- Program leaders and frontline and administrative staff believe that there is much to be gained from remaining flexible during program implementation and from fine-tuning their roles and the program as needed.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 29, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals were to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient

engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Collaborative Consultative Care Coordination (4C) program, which is being implemented by Boston Medical Center. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Boston Medical Center's program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during site visits to Boston Medical Center and its partner, Baystate Medical Center (Baystate), in October 2015; and a review of the awardee's reports, submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Boston Medical Center's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
 3. How does the awardee make decisions about program-related changes?
 4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?
-

We also provide a brief summary of Boston Medical Center's impact evaluability assessment and identify the next steps in our evaluation.

A. Introduction

Boston Medical Center and Baystate are using HCIA R2 funds to implement the Massachusetts Alliance for Complex Care program, referred to as the Collaborative Consultative Care Coordination (4C) program, which was launched on December 12, 2014.

The 4C program targets children with medical complexity (CMC), defined as children with any one or more diagnoses reflecting a chronic condition (for example, neuromuscular disorders, autism spectrum diagnoses, or congenital defects). The program helps these children and their families to coordinate social, educational, financial, developmental, behavioral, and medical services. Boston Medical Center hypothesizes that improving care coordination for CMC and their families will lead to improved child functional status and caregiver experience, as well as care that is less costly.

The 4C program has three goals:

1. By December 2014, to ensure that CMC in Massachusetts and their primary care providers (PCPs) have access to comprehensive diagnostic services, multidisciplinary care planning, and care coordination
2. By March 31, 2017, to improve the functional status of children enrolled in the program and to lower stress and alleviate depression in parents and other caregivers
3. By March 31, 2017, to achieve an approximately 13 percent reduction from baseline in the per beneficiary per year total cost of care by reducing hospitalizations

Other key characteristics of the 4C program are described in Table 1.

Table 1. Boston Medical Center: 4C characteristics at a glance

Program characteristic	Description
Purpose	The Collaborative Consultative Care Coordination (4C) program from Boston Medical Center (BMC) helps children with medical complexity (CMC) and their families to coordinate social, behavioral, and medical services.
Components	<ul style="list-style-type: none"> Care coordination (primary) Health information technology (secondary)
Target population	<p>To be eligible for 4C services, referred CMC must have empirical evidence of high utilization. For example, 10 or more combined ED or clinic visits; 10 or more days in the hospital; or be at risk of high utilization, including:</p> <ul style="list-style-type: none"> Receiving referrals to multiple specialists (for example, neurology, pulmonology, endocrinology, and so on) Having conditions that affect multiple body systems (for example, head, lungs and glands) Experiencing an ICU admission that causes a significant change in a child's health and need of services Any complicating psychosocial and economic factors that are (or are at risk of) adversely affecting outcomes, including children whose caregivers have significant stressors
Theory of change/theory of action	BMC and Baystate hypothesize that improving care coordination for CMC will lead to improved child functional status and caregiver experience, as well as care that is less costly.
Payment model	<p>Per capita care management payment</p> <p>In Year 3, the payment model will consist of a monthly collaborative care management and consultation fee costing less than health plans can expect to save by purchasing the 4C program's service for CMC. Fees will be based on actual savings accrued to date on CMC enrolled in the program.</p>
Award amount	\$6,128,059
Launch date ^a	December 12, 2014
Setting	Acute care, nonprofit, academic medical centers
Market area	Urban
Market location	Massachusetts (Boston and Springfield)
Core outcomes	<ol style="list-style-type: none"> Improved care coordination Improved child functional status Improved caregiver experience Lower costs of care

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on (1) the awardee's application; (2) self-reports submitted by Boston Medical Center to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) telephone discussions with the awardee; and (4) interviews with 4C program leaders and staff during our site visits to Boston Medical Center and Baystate (October 26 to 29, 2015). We used a standardized document review tool to abstract key data from the application, the first four quarters of the awardee's self-reports, including operational plans, self-

measurement and monitoring plans, program narratives, progress reports, and other supplemental materials. During the visits, we interviewed program leaders and frontline and administrative staff.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from respondents, we audio-recorded and transcribed all interviews. A team member received training, achieved inter-rater reliability on coding, and coded the transcripts to organize the data for analysis. The team then extracted coded data pertaining to the research questions identified in Section C below. Using these extracts and information from the awardee self-reports, the evaluation team synthesized the information into this narrative on Boston Medical Center's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Boston Medical Center developed the 4C program based on the competencies and functions in the Framework for High-Performing Pediatric Care Coordination (Table 2). This framework defines pediatric care coordination as a patient- and family-centered, assessment-driven, team-based activity designed to meet the needs of children and youth while enhancing the caregiving capabilities of families.¹ In the first year of program implementation, Boston Medical Center and Baystate adapted the program when necessary to meet participant and family needs while adhering to these competencies and functions.

Table 2. Framework for high-performing pediatric care coordination

Care coordination competencies	Care coordination functions
1. Develops partnerships	1. Provides separate visits and care coordination interactions
2. Communicates proficiently	2. Manages continuous communications
3. Uses assessments for intervention	3. Completes/analyzes assessments
4. Is facile in care-planning skills	4. Develops care plans with families
5. Integrates all resource knowledge	5. Manages/tracks tests, referrals, and outcomes
6. Possesses goal/outcome orientation	6. Coaches patients/families
7. Takes an adaptable and flexible approach	7. Integrates critical care information
8. Desires continuous learning	8. Supports/facilitates care transitions
9. Applies team-building skills	9. Facilitates team meetings
10. Is adept with information technology	10. Uses health IT

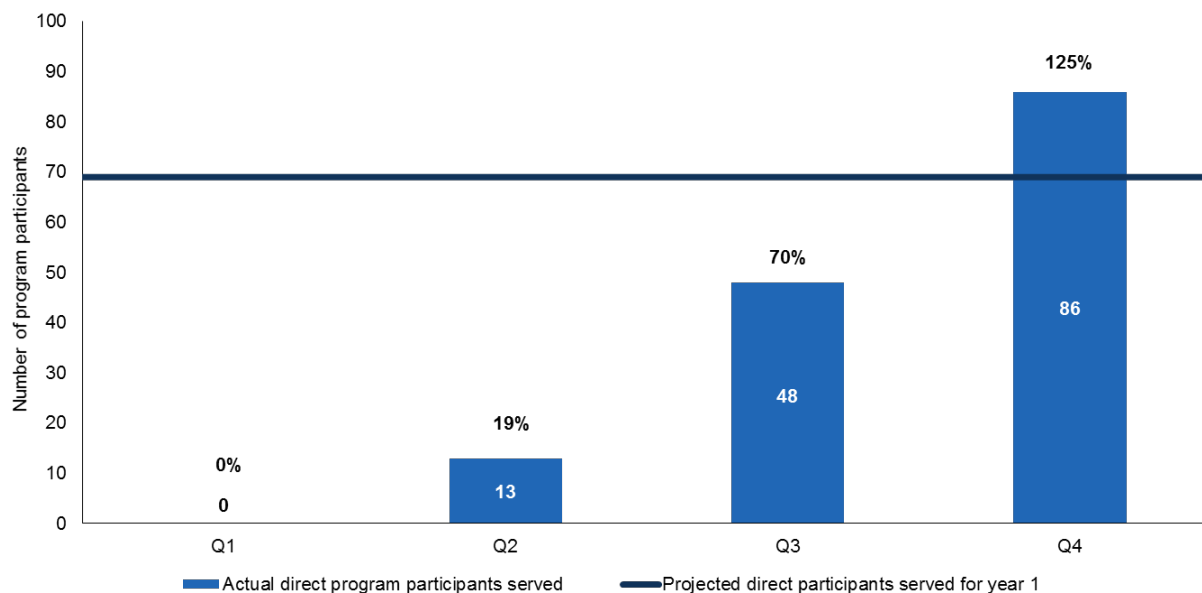
Source: Antonelli, R.C., J.W. McAllister, and J. Popp. "Making Care Coordination a Critical Component of the Pediatric Health System: A Multidisciplinary Framework." The Commonwealth Fund, May 2009.

To meet enrollment goals, 4C program staff are using multiple approaches to raising awareness of program services among providers and families in the Baystate and Boston Medical Center communities so that providers will refer CMC, or families themselves will seek out program services. Program leaders and frontline and administrative staff advertise

¹ Antonelli, R.C., J. W. McAllister, and J. Popp. "Making Care Coordination a Critical Component of the Pediatric Health System: A Multidisciplinary Framework." The Commonwealth Fund, May 2009.

program services throughout local community health centers, primary care practices, intensive care units, and professional associations. Program leaders and frontline staff noted that, despite enrollment challenges including weather-related program delays and lack of access to claims data to identify eligible children, their efforts to market the program have been quite successful. Boston Medical Center and Baystate expect to enroll 500 participants by the end of the cooperative agreement and to retain 450 of them (expecting a 10 percent disenrollment rate).² During the site visit, we learned that Boston Medical Center was in the early stages of developing a discharge protocol to disenroll participants who become disengaged from the program, meaning they do not return phone calls from program staff or they miss appointments. As of August 31, 2015 (the end of the program's fourth quarter), Boston Medical Center and Baystate had enrolled and served 86 participants, 10 more than projected, and both sites had identified potential participants whom they were planning to enroll in the near future (Figure 1). As of October 29, 2015, neither Boston Medical Center nor Baystate had disenrolled any participants.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. Boston Medical Center does not have indirect program participants.

² After enrolling, participants remain enrolled for the duration of the program unless they reach the age of 22. At that point, they will be transitioned into adult care.

During our site visits, several respondents talked about how Baystate faces fewer enrollment challenges because it is the only pediatric hospital in Springfield, Massachusetts, where it is located. In contrast, Boston Medical Center faces competition from several other pediatric providers in the Boston area who offer services to CMC. As a result, Boston Medical Center is enrolling a higher percentage of children with complex behavioral health issues as a percentage of their total enrolled patient population, while Baystate is enrolling a higher percentage of children with complex medical issues.

In May 2015, program leaders refined the eligibility criteria to more clearly define the desired patient profiles. During our site visits, program leaders noted that the criteria were flexible based on the complex care pediatrician's subjective assessment of CMC's and their family's social and medical needs. Current eligibility criteria program participants include at least one of the following:

- Have had 10 or more emergency department (ED) or clinic visits combined in the calendar year before they were referred to the program
- Have had 10 or more days in the hospital in the calendar year before they were referred
- Are at risk of high service use, including being referred to numerous specialists; having conditions that affect several body systems; being admitted to an intensive care unit related to a significant change in both health and the need for services; or having any complicating psychosocial and economic factors that are adversely affecting—or that could adversely affect—outcomes, including caregivers experiencing significant stressors³

The program launched in December 2014 at Baystate and January 2015 at Boston Medical Center. Both sites have generally implemented the program based on the original timeline, with the exception of developing a patient registry. Boston Medical Center plans to work with the Analysis Group⁴ to develop a patient registry that will track diagnoses, referrals, laboratory results, and health outcomes in addition to alerting program staff when contact with a family is necessary. However, Boston Medical Center has faced difficulty obtaining from payers the claims data necessary to develop the patient registry. The awardee has data sharing agreements in place with some payers that are participating in the development and testing of the payment model, but the awardee has encountered problems identifying necessary data fields, determining data availability, and formatting data requests. Boston Medical Center leaders were attempting to

³ From the program launch in December 2014 through mid-May 2015, the eligibility criteria included CMC with evidence of at least one of the following: conditions affecting three or more organ systems, ongoing involvement with three or more specialists, 10 clinic visits in a year, 10 hospital days, a pediatric intensive care unit (PICU) or neonatal intensive care unit (NICU) admission for a chronic condition that will likely have prolonged morbidity and complexity, complicating psychosocial and economic factors that are (or are at risk of) adversely affecting outcomes; and, in combination with the above, a behavioral health or developmental diagnosis with complicating medical or psychosocial issues in the child or a family member.

⁴ The Analysis Group is a consulting group that provides expertise in economics, finance, and health care analytics and strategy to a wide range of companies.

overcome this challenge by seeking guidance from other awardees who have been successful in obtaining claims data from payers.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

a. Primary Component: care coordination

The care coordination functions that Boston Medical Center and Baystate are implementing as part of the 4C program include an initial multidisciplinary assessment at enrollment; comprehensive care plan development; referrals to social, educational, behavioral, and medical services; and ongoing collaborative care coordination. The 4C staff are organized into teams that comprise a nurse care coordinator, a social worker, a family navigator, a child psychiatrist (or child psychologist), a nutritionist, and a complex care pediatrician. The nurse care coordinators are the clinical hub of each team. The team is led by the complex care pediatrician who is not the participant's PCP.

The 4C care teams have developed partnerships with PCPs and specialists who see much value in referring children and families to the program. The 4C care teams will not enroll a child without the PCP's authorization. If the referral comes from someone other than the PCP, the complex care pediatrician calls the PCP to discuss the program and assess the PCP's interest in having his or her patient enroll. One of the 4C care team members noted that the team views the PCP as "the boss" and itself as a care support program; team members make recommendations to the PCP based on their comprehensive assessment but will not pursue medical services for the participant without the PCP's authorization. The 4C providers and program staff acknowledged that families can become overly reliant on them because of the substantial resources they are able to offer; as a result, they educate families on their role versus the PCP's role in their medical care. The 4C staff perceived that some PCPs were initially wary that the 4C program would take patients away from them, but over time most PCPs came to appreciate the services provided to their patients by the program.

To meet the myriad needs of participants and families, program leaders and frontline and administrative staff emphasized the importance of being part of a team of self-motivated individuals with professional expertise and a commitment to the population served by the program. Program leaders and frontline and administrative staff described

"Our team is amazing, honestly. I have to say I've never worked with people like this. Everyone's really invested, really passionate, really like it's all about making our families get to that better place . . . so everyone has the same mentality, and I love it."

— 4C program staff member

themselves and each other as being passionate about helping the participants and families involved in the 4C program. They cited efforts to meet the many, diverse needs of participants and families, such as acquiring mattresses and winter coats; helping families to obtain utility shut-off protection, access to food pantries, and funds to pay overdue bills; and going to the registry of motor vehicles to help parents complete paperwork.

Program leaders and frontline staff described how constant communication supported teamwork necessary to meet participant and family needs.

The 4C care team members noted the value of the entire team debriefing after every intake and assessment appointment to discuss participant and family needs and brainstorm about necessary referrals.

This post-assessment debriefing ensures that all team members have the opportunity to give immediate input on each

participant's care plan and that different needs are addressed without duplicative efforts. Team members described how communication among the team helped them to be mindful of one another's expertise, increasing the distinct contributions made by individual team members and the resources they have access to that benefit participants and families. In addition, program staff who share a workspace described how it facilitates teamwork because they can overhear each other's telephone conversations, so they are aware of the status of referrals. They said the shared workspace also facilitates brainstorming necessary to resolve complicated issues, such as finding transportation. However, some program staff raised concerns about the potential for Health Insurance Portability and Accountability Act (HIPAA) violations when discussing participants in a shared workspace.

"But one of the really nice things is that with a team, you can get a lot more information, you can get information from multiple sources, and they will do the legwork that's necessary for many families."

— 4C provider

Program staff noted that the initial multidisciplinary intake and assessment appointment does not give them enough time to gather necessary information from participants and families.

Both Boston Medical Center and Baystate schedule the intake assessment appointments on a specific day each week. (Boston Medical Center schedules the appointments on Wednesday mornings, and Baystate schedules them all day on Fridays). Each appointment is two hours. During that time, each care team member tries to gather information from the family to make an assessment based on his or her professional expertise. Program staff mentioned that it is difficult for families to come in during the week and that the two-hour appointment time can be long and tiring for participants and families; the families have long stories as well as a lot of needs and resource constraints. The two-hour time slot is insufficient for each team member to gather information necessary to make assessments and fully understand the family's needs. In addition, families often arrive late, leaving even less time for program staff to spend with them. During the appointment, families sometimes mention immediate "emergency" needs, such as dealing with being evicted, that put additional pressure on the care team and make it challenging to manage the team's time. Another challenge, particularly in connection with participants who have PCPs who are outside of the Boston Medical Center or Baystate networks, is that program staff typically have very little or outdated information about the participant before the intake and assessment appointment.

“We started doing the home visits because we realized there’s no way that anyone can really be inside a room for two hours seeing a nutritionist, a psychologist . . . and also because the social work piece, a nonmedical piece, I feel like it really needs a separate time to kind of just give mom or dad just a little bit of time to process that piece and not so much focus on everything else that’s going on with their child. We do this pre-intake conference that we talk about family life, what supports are in place, what supports need to be in place, and just get a sense of what is going on and how we can help really.”

— 4C program staff member

Program staff have developed strategies for overcoming the challenges posed by the intake and assessment appointments. To facilitate information gathering during the two-hour assessment appointment, program staff started scheduling telephone calls or home visits with families before the assessment appointments. During this pre-intake phone call, program staff discuss the support the family is receiving and the agencies that are involved in the participant’s care. Program staff also request the participant’s medical records from all of

the participant’s providers as soon as a consent form is signed. To further increase the efficiency of gathering information during the two-hour assessment appointments, program staff have started to meet with the family in pairs: the nurse care coordinator and physician will meet together with the family to do a medical history and explain care planning; then the social worker and family navigator; then the psychiatrist and the developmental behavioral physician; and then, if necessary, the nutritionist.

b. Secondary Component: health IT

The 4C program staff use a secure, cloud-based, Internet portal (ACT.md) to ensure that the comprehensive care plan is available to families, PCPs, and other providers involved in the participant’s care. The nurse care coordinator develops the comprehensive care plan⁵ in ACT.md after the multidisciplinary assessment and before the follow-up visit that occurs one month after the assessment. During the follow-up visit, the team reviews the comprehensive care plan with the family before it is made available to others on ACT.md.

⁵ The comprehensive care plan includes three sections. The first section has basic information, including the guardian’s name, address, and telephone number. It also includes the participant’s medical record numbers, diagnoses, allergies, insurance information, and advance directives. The second section includes emergency plans. The third section includes information about the specialist providers from whom the participant receives care and information about hospitalizations or surgeries that could have residual effects on the participant.

Program staff described a number of benefits to maintaining care plans in ACT.md.

ACT.md makes the care plan available to providers across multiple systems and gives them a comprehensive understanding of the participant. As a result, providers do not have to spend time interviewing the family and reaching out to other providers to gather the information they need to make treatment decisions. Program staff perceive that ACT.md should be easy for families to use and that it provides a way to communicate with families other than the phone. Program staff also noted the benefit of ACT.md in helping them manage relevant tasks among the team, standardize program workflows, and improve care coordination because everyone can see what each team member is working on for each participant and understand the implications of the status of other tasks for their own tasks.

Providers outside the program are generally not accessing the care plan in ACT.md despite its useful, comprehensive information. Program staff invite other providers involved in the participants' care to use ACT.md, but the providers rarely do so. However, program staff provided a few examples in which families referred a provider to the care plan in ACT.md, who then expressed appreciation for having access to comprehensive patient information.

"[ACT.md] is just another system that they have to learn. Another system that they have to enter into in addition to [the EMR]. They probably have another system for something. . . . We use just so many systems already."

— 4C program staff member

Families are slow to access their child's care plan in ACT.md. Program staff review the care plan in ACT.md with all families to ensure that they understand it and are comfortable with its content before the care plan can be accessed by others. However, few families use the care plan in ACT.md regularly. For example, staff instruct families to use the care plan during emergencies; however, the majority of families who have taken a participant to the emergency department (ED) have not told the ED staff about the care plan in ACT.md and in some cases have spent time working with the ED staff to recreate information contained in the care plan, such as a list of the participant's current medications. Program staff mentioned a number of obstacles that families face in accessing ACT.md, including weak literacy skills, no email address, or lack of regular access to a computer with Internet access or to a smart phone that is compatible with ACT.md. Program staff believe that families find ACT.md cumbersome to use at first and—just as providers—might already be accessing a number of systems, including a school portal and an electronic medical record (EMR) portal. Program staff believe in the potential of ACT.md to support families and hope that they will be able to help families overcome these obstacles. They are also working with the ACT.md vendor to adapt it so that it will be easier for families to use.

“They are a relatively new platform, so we’ve been growing together. . . . We’ll tell them the needs that we have for the platform. Then being able to see those implemented and work in that direction together, it’s been really pretty neat. . . . And I feel like every time we talk to parents, patients, or other community health centers that we invite onto the platform, it’s not exactly what we want, but it is a work in progress.”

— 4C administrative staff

Program staff have faced challenges using ACT.md. ACT.md was initially complex and not user-friendly, but the vendor has been responsive and has worked with program staff to customize and simplify it. For example, program staff pushed for ACT.md to develop a smartphone app that would be easier for families to access their care plan, and ACT.md programmers

complied.

The ACT.md has not been integrated with the EMR. Program staff can manually put the ACT.md care plan in the EMR such that it is the first thing anyone will see when they access a participant’s record; program staff perceive this as being a good advertisement for the 4C program and the care plan. However, putting the care plan in the EMR takes time. Furthermore, the EMR must be manually updated each time the care plan is changed in ACT.md or it will be out of date. Another challenge related to the lack of integration between ACT.md and the EMR is that program staff must document changes in both systems. This requires putting information in one system and copying it to the other—a time-consuming process fraught with technical difficulties, including ACT.md crashing.

3. How does the awardee make decisions about program-related changes?

Program staff are tracking in-person encounters, telephone encounters, and electronic encounters and are reporting this information to the Centers for Medicare & Medicaid Services (CMS). Boston Medical Center is relying on program staff to manually track these encounters in ACT.md. As the number of program participants has grown, tracking encounters manually has gotten more difficult. Administrative staff hope they can work with the ACT.md vendor to develop an automated method of tracking encounters. At this point, program staff are not using encounter information to make program-related changes during implementation.

Program staff provided examples of program adaptations that they have made based on their experience with the program. One such adaptation resulted from their realization that the screening tools initially selected to track improvements in child functional status and daily living skills took too much time to administer and were a burden to participants and their families. Program staff identified different screening tools.

Program leaders and frontline and administrative staff noted the benefits of approaching the implementation of the 4C program flexibly and fine-tuning as it grew.

Program leaders defined the roles needed for the care team and identified the types of individuals who would best fill them. They then systematically recruited staff who had the requisite professional training, relevant experience, and an

“What’s so neat about this is that we can adjust it to what suits our needs as we move along, which is what they’ve been doing since the beginning. So if we find something that’s not working as well [as expected], we can tweak it.”

— 4C program staff member

obvious commitment to the program’s goals. Program staff appreciated having the opportunity to refine their roles in the program and establish workflows that would make the program a success. They also appreciated having the opportunity to develop the program over time and refine it based on participants’ needs. For example, one staff member said that she learned that in order to reduce the number of no-shows for the initial intake visit, she had to call the families to remind them. She also had to figure out how to organize the information she was collecting during intake so that she was not just taking random notes. The mental health providers described having to adjust their usual approaches to assessment and treatment planning. For example, in their usual role as mental health provider they are responsible for the patient’s case. But in the 4C program they act as consultants who recommend referrals, so they had to determine how to manage families’ expectations and establish boundaries around the extent of mental health care they were providing.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

Boston Medical Center developed its payment model based on the theory that if the care provided to CMC is coordinated and proactively managed, then they and their families will have better access to needed medical, behavioral, and social services, thus reducing hospitalizations. As a result, the cost of caring for CMC will decrease.

Boston Medical Center and Baystate plan to demonstrate a decrease in costs by obtaining baseline cost and utilization data for all enrolled participants from participating payers. They will then use these data to track cost, utilization, and quality. In Year 3 of the cooperative agreement, they expect to develop a monthly care coordination and consultation fee that is less than the costs saved by payers whose beneficiaries are enrolled in the 4C program but high enough to yield a positive margin for themselves. The payment model will be implemented differently in the two sites. Baystate is joining an accountable care organization, which would likely invest in sustaining the program if it improves health outcomes and achieves cost savings. As a safety net hospital, Boston Medical Center receives disproportionate share hospital payments, making a payment model for the 4C program more complicated. So, if the program reduces the cost of care to the medical center resulting in a reduction in hospital revenue, the disproportionate share hospital payments would neutralize the financial benefit of the program for Boston Medical Center. Program leaders were uncertain about the implications of this issue on payment model development; however, they confirmed support from the medical center for developing a payment model to sustain the program.

The biggest challenge that Boston Medical Center faces in implementing payment reform is obtaining baseline cost and utilization data for all enrolled participants. Without these data, Boston Medical Center will not be able to demonstrate that the 4C program reduces the costs of providing care to CMC. In the third program quarter (March through May 2015), 4C staff developed a billing system to track costs associated with care provided to program participants in order to determine reimbursement rates for 4C services.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we have identified two major barriers to conducting a rigorous impact analysis of the program in time for the project's final report in January 2019. The first barrier is the small number of publicly insured children targeted for enrollment whom we can include in a claims-based analysis using Medicaid or CHIP data ($n = 400$). In addition, Boston Medical Center and Baystate will enroll the 400 children on a rolling basis through the end of the third year of the cooperative agreement. Some children will not be enrolled for long enough to receive program benefits by the end of the agreement. The second barrier is the two- to three-year lag in Medicaid/CHIP data availability in Massachusetts. These data lags will not allow enough time for enough children to accrue program benefits by the time we need to conduct our impact analysis. The awardee is negotiating with the state and with CMS to see if it can access treatment group claims (and to provide them to us) in a more timely way. We will also monitor CMS's transition to the T-MSIS, the agency's new Medicaid data system that is in the operational test phase, to determine whether it reduces the time lag for receiving Massachusetts Medicaid data for a comparison group.

We will monitor program enrollment and Medicaid data availability for Boston Medical Center. If enrollment continues on schedule and if Medicaid data lags continue to be at least two years, we recommend forgoing a claims-based impact evaluation. However, if Boston Medical Center enrolled at least 400 Medicaid or CHIP beneficiaries by early 2016 (well ahead of schedule) and if Massachusetts Medicaid data became available for the treatment and comparison groups with less than a two-year lag, we would recommend reconsidering an impact evaluation.

E. Next steps

We look forward to working with Boston Medical Center for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct virtual site visits consisting of series of telephone interviews with awardee and program leaders and staff in the summer of 2016. We will use these telephone interviews to follow up on issues identified during

the site visit in the fall of 2015. Specifically, we will inquire about recent changes to the program, obtain information on the enrollment process, and update our understanding of the challenges to and facilitators of implementing program components. We will document our findings on these topics in future reports.

2. Impact evaluation

Over the next several months, we will have ongoing discussions with Boston Medical Center to determine its success in negotiating with MassHealth to receive Medicaid claims data on a lag shorter than two years. We will also monitor Massachusetts' transition to T-MSIS to determine the data lag in that system. In addition, Boston Medical Center will send us its first finder file. As soon as the 2014 Medicaid claims data are available from Boston Medical Center or from CMS, we can link the finder file to the claims data and calculate baseline descriptive statistics about program participants—including, their age; sex; and baseline health care utilization (that is, hospitalizations, readmissions, and ED visits) and costs.

Boston Medical Center is collecting survey data using the Pediatric Quality of Life Inventory (PedsQL) to assess participants' functional status at baseline and every six months thereafter. Boston Medical Center and its local evaluator, Analysis Group, will be conducting time-trend analyses to assess whether participants' functional status improves over time. Boston Medical Center will include these findings in reports to CMS. However, given the lack of data from a comparison group, Boston Medical Center will not be able to determine whether any changes over time are due to the program versus other factors. In light of challenges obtaining Medicaid claims data for evaluating the 4C program, we have spoken with Boston Medical Center and Analysis Group about their plans for the PedsQL data and are exploring whether Mathematica can add value to the analyses they have already planned. However, given the lack of comparison group data, we are unlikely to be able to add value to what Boston Medical Center and Analysis Group are already doing.

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APPENDIX B.7

CARECHOICE COOPERATIVE

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REPORT

APPENDIX B.7

HCIA Round Two Evaluation: CareChoice Cooperative

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 16, 2015)

Successes

- Transition coordinators are on board at each facility. Staff have been trained and are using the new decision support tool (called Engage) and the associated monitoring reports.
- Frontline staff and facility leaders report that participants and families are more engaged and more consistently prepared to safely transition home.

Challenges and strategies to address them

- Staff turnover and vacancies following the departure of transition coordinators have been a challenge. The leaders of the Patient Centered Care Connections (PCCC) program have created a transition coordinator sustainability plan and are working with facilities when turnover occurs.
- Lack of consistent, multidisciplinary buy-in across facilities has been a challenge. PCCC leaders are working with nursing home leaders and transition coordinators on how to reinforce the importance of engaging staff across disciplines—for example, by using Engage and working closely with transition coordinators.

Lessons learned

- Multidisciplinary team engagement is needed to support transition coordinators' efforts on creating a more robust transition planning process and in using the Engage decision-support tool.
- The level of engagement and commitment of facility leaders to the program and of support for a multidisciplinary approach to transition planning are important to the program's success.
- The regular presence and availability of PCCC staff at participating nursing homes helps (1) reinforce program processes, such as working with team members of all disciplines; (2) provide continuous technical assistance on software; and (3) educate facilities on how to monitor their own performance.
- An emphasis on proper documentation (such as greater specificity of payer source) and the development of additional data tracking systems for performance measurement and monitoring are also needed.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 16, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program costs in outpatient or post-acute settings; (2) improve care

for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Patient Centered Care Connections (PCCC) program, which is being implemented by CareChoice Cooperative. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of CareChoice's program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to CareChoice; and a review of CareChoice reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of CareChoice's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
 3. How does the awardee make decisions about program-related changes?
 4. To what extent has the awardee begun to plan for or implement payment reforms?
-

We also provide a brief summary of CareChoice’s impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

CareChoice, a cooperative of nursing homes, senior independent housing, and assisted living communities in Minnesota, received an HCIA R2 award to pilot the PCCC program. The PCCC program seeks to improve the care and safety of and reduce the total cost of care for post-acute care patients in nursing homes (also known as skilled nursing facilities, or SNFs) who are transitioning back to the community. The participating sites include 10 SNFs that will test how additional staffing, decision support tools, and training impact the patient transition experience, as well as health and cost outcomes, through two primary components—(1) improving patient and family engagement and (2) transitional care coordination (for the remainder of this document, we will refer to all patients on the transitional care unit [TCU] as participants).¹ The program’s additional staffing consists of a newly created transition coordinator position at each participating facility, who will have responsibility to develop comprehensive transition plans for participants using a web-based decision support tool called Engage.² This tool is designed to assist multidisciplinary teams (social workers, therapists, nurses, admissions staff, and medical records staff) working in post-acute care settings with tracking and completing a robust transition planning process, beginning when patients are admitted to the TCU and including “learning lessons” with participants and their families.

The training component of the program involves identification and completion of lessons that serve as key facilitators of increasing participant and family engagement in the participant’s care. Learning lessons are short education modules within the Engage tool that teach participants important information about specific health conditions or general wellness, such as improved nutrition. These lessons give residents information on how to care for their health and look for signs of changes in health quality. During the participant’s stay, the transition coordinators and other staff conduct relevant lessons with the participant and his or her family. A lesson is considered complete once a facility staff member has gone through the lesson in person with the participant and gauged comprehension, either through test questions reviewed at the end of the lesson or based on general engagement during the conversation. With the support of the multidisciplinary team, the transition coordinators prepare a comprehensive transition plan, including copies of all completed learning lessons, and review the plan with participants prior to discharge. The transition plan is sent home with participants and faxed to each participant’s primary care physician or specialist.

¹ Although not all TCU patients will be included in the program’s final evaluation data, all of them receive the transition services associated with the PCCC. For example, individuals participating in the program but later transferred to a long-term care bed or hospice will be excluded from the data analysis. Patient exclusions are described in more detail in the impact analysis section later in this report.

² The Engage web tool was created by Align, an organization focused on improving care transitions in the post-acute care arena.

The PCCC gives each of the participating facilities HCIA R2 award money to pay for a transition coordinator's salary and discretionary supplies; facilities have the flexibility to either hire new transition coordinators or recruit existing staff to take on this new role.³ Award monies are not used to support other staff at the facilities who are involved in the PCCC's transition coordination activities. Frontline staff explained that although they had done transition planning activities before the PCCC, those activities often began near the end of a patient's stay and produced less comprehensive documents that did not seem as helpful to patients and caregivers as those produced through the PCCC program.

In addition to the web-based Engage tool, the PCCC program integrates principles of Project RED (Re-Engineered Discharge),⁴ a nationally recognized guiding framework for discharge planning and transition process improvement. During the initial program implementation phase, a representative from Align (the organization that created Engage) went to every participating nursing home for a full day to train staff on Engage. At that time, all transition coordinators and any other staff the facility chose to include participated in 6.5 hours of in-person training. PCCC leaders and Stratis, the internal evaluation contractor, also taught this group about the relevant components of Project RED. Following this initial training, new staff added to a facility's transition team are to be trained by the transition coordinator. Program staff provide the transition coordinators additional support as they train new staff. Transition coordinators hired after the onset of the program receive the full 6.5 hours of in-person training by Align, along with training from program staff.

The transition coordinators are expected to provide ongoing training and support to the rest of the multidisciplinary team as each member uses Engage to document and monitor his or her part of the transition work. The transition coordinator's role also typically includes performing the majority of the tasks related to PCCC program coordination and reporting, as well as reviewing the team's final transition care plan with participants and conducting post-transition follow-up phone calls. Neither program staff nor the Engage tool prescribes how facilities are to divide the workload among team members; facilities determine the structure and staffing that works best for their organization. However, PCCC leaders stressed that the program is designed to be multidisciplinary and will be most successful when there is careful coordination across the full team of individuals involved in transition planning—including nurses, physical therapists, social workers, and individuals from admissions and medical records—in addition to the transition coordinators.

³ One facility we visited chose to divide the transition coordinator role between two individuals already working at the facility, assigning .5 FTE to each.

⁴ Project RED (Re-Engineered Discharge) is a program originally designed for hospitals to improve the transition process and increase opportunities for patient engagement. The program was later adapted to the nursing home environment, a setting where transition planning has been less of a focus because most patients are typically long-term residents who are not discharged to home. Transition planning has become even more critical in nursing homes as the acuity level of patients being cared for in them has increased.

PCCC leaders and staff monitor the program components through utilization reports using performance metrics and targets specifically developed for the PCCC by program staff and Stratis. Program staff will evaluate the impact the program has on participant satisfaction, hospital readmissions, and total cost of care, with the assistance of Stratis. Align and the PCCC also produce multiple aggregate reports on facility performance to highlight and explore opportunities for improvement in documentation and program implementation. Several additional facility-specific reports and real-time digital dashboards are available through the Engage tool. Individual facilities use these reports to identify ways to improve the transition planning process. The dashboards help users track upcoming tasks, such as which follow-up calls need to be completed when, and note progress made in completing each participant's transition care plan. Align continues to develop new reports based on input from participating PCCC facilities.

Participants are asked a few short survey questions about their experiences soon after admission to a facility through the administration of Engage's survey tool, called "In the Moment." Transition coordinators or other designated staff administer a second "In the Moment" transition readiness survey shortly before each participant is discharged. Transition coordinators and quality improvement teams can use these results to determine if scores improve over a participant's stay. Facilities can produce a summary report reflecting a 12-week rolling average of participant answers and scores to the "In the Moment" surveys. In addition, authorized facility staff can produce a patient snapshot report, which shows each individual participant's answers to the surveys. Each facility's transition coordinator determines which staff members have access to view or enter data in Engage.

Facility staff (typically the transition coordinator) also conduct a satisfaction survey two days after the participant transitions to home and follow up with telephone calls after 30 days and 90 days. During these three calls, they collect self-reported hospital readmission data from the participant or the caregiver. Staff reported that most participants are pleased that the facility is taking the time to call them. Staff also reported that participants are more likely to call with questions after discharge because key staff phone numbers are provided in each transition care plan and participants are reminded before they leave the facility that they can always call the care team members if they have questions or concerns. Table 1 summarizes key PCCC characteristics.

Table 1. CareChoice: PCCC characteristics at a glance

Program characteristic	Description
Purpose	A newly introduced role at nursing homes—the transition coordinator—in concert with a web-based decision support tool (Engage) will increase patient and family engagement with staff and improve the process of transitioning back home in the community, thereby reducing unnecessary hospital readmissions and improving the quality of care delivered.
Components	<ul style="list-style-type: none"> • Patient and family engagement (primary): Increased communication between members of multidisciplinary transition team and patients and families, including opportunities for feedback and education • Transitional care coordination (primary): Improved transition process with increased communication among multidisciplinary transition team and more comprehensive transition documentation for patients and caregivers • Quality improvement and workflow process redesign (secondary) • Education and training (secondary)
Target population	Medicare, Medicaid, and dually eligible beneficiaries admitted to participating nursing facilities as short-stay patients
Theory of change/theory of action	PCCC will reduce the total cost of care as well as hospital readmissions for post-acute nursing home patients through improved care and safety of patients as they return to their homes in the community.
Payment model	RUGs ^a per diem payment plus shared savings for participating providers (proposed)
Award amount	\$3,347,584
Launch date ^b	January 1, 2015
Setting	Transitional care units in participating nursing homes
Market area	Urban, suburban
Market location	Minnesota
Core outcomes	<ul style="list-style-type: none"> • Reduced total cost of care for post-acute nursing home patients and reduced hospital readmissions • Increased patient and family satisfaction and understanding of the discharge plan

^aRUGs are Resource Utilization Groups, the payment categories in Medicare's prospective payment system for Medicare SNFs. An SNF resident's RUG is determined by the severity of the resident's medical condition and skilled care needs.

^bAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by CCC to the implementation and monitoring contractor that cover the first year of the award (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to the PCCC program from October 13 through 16, 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

In order to achieve diversity in the five facilities we visited, we considered both their settings (urban versus suburban) and sizes (number of beds). We chose these characteristics based on preliminary discussions with PCCC leaders, who noted that the participating nursing homes have more similarities than differences in terms of program implementation, but vary in location and size across the 10 participating homes. All 10 sites participated in a previous program focused on reducing avoidable hospital admissions called Resident Centered Care Connections; all are members of CareChoice.

The site visits were conducted in the Minneapolis–St. Paul region of Minnesota with the following five participating facilities: (1) Crestview Lutheran Home, (2) Guardian Angels Senior Services, (3) Ramsey County Care Center, (4) Mount Olivet Careview Home, and (5) Three Links Care Center. In addition to visiting with the leaders, TCU staff, and care coordination teams at these five facilities, we met with the following groups to learn more about the program and the data collection and reporting processes: (1) CareChoice leaders, (2) PCCC program staff, (3) Stratis, and (4) the PCCC liaison for Align’s Engage tool. We also observed the October monthly meeting of the transition coordinators, which included staff from all 10 participating SNFs.

At each SNF, the team met with administrators, directors of nursing, transition coordinators, and team members involved in the transition planning process. We toured each SNF, spoke with these staff members, observed the interactions among team members, and observed their use of the Engage tool to better understand the similarities and differences in implementation across facilities. At one SNF, we also observed a transition coordinator conducting a learning lesson with a participant who was being discharged that day.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. An analyst from the HCIA R2 team, separate from the two-person site visit team, received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts that described the implementation experience. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this report on the PCCC’s implementation experience.

C. Findings

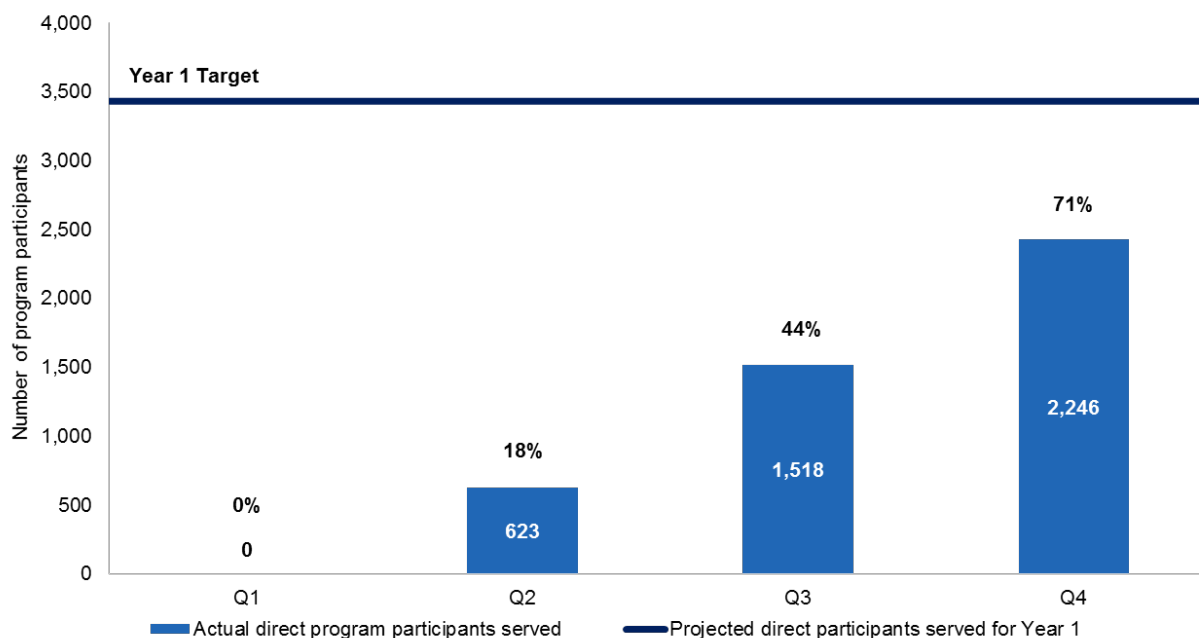
1. How effectively has the program been implemented?

Overall, the PCCC implementation has gone well and been implemented within the projected timeline. Program staff encountered a few challenges during the implementation process, mainly in the form of lower enrollment than anticipated and from SNF staff turnover. As discussed in more detail below, PCCC leaders guided the program through these challenges and developed strategies to address turnover in transition coordinators. The program exceeded some of its original performance targets on several process measures—including, timely transmission of the transition plan to the relevant outpatient provider, and attempted and

successful follow-up calls after discharge. The program also exceeded targets on all three satisfaction questions asked on the first follow-up call. Program staff worked with the Centers for Medicare & Medicaid Services to increase targets on these measures, as well as a few others, to facilitate continued progress.

Staff at facilities we visited regularly implemented the “In the Moment” surveys at the beginning and end of each participant’s stay; they reported benefiting from this effort. Facility staff used different processes to address concerns and less favorable ratings provided by participants through these surveys. Some facilities immediately direct the complaint to the department best able to address the problem, while others continue working within established, more formal grievance systems.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014–August 2015.

Note: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. CareChoice does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The two primary components of the PCCC program (patient and family engagement, transitional care coordination) are closely linked. Although we are distinguishing between these two components for evaluation purposes, program staff consider them parts of an integrated program. The main new features introduced by the PCCC—the transition coordinator and the Engage decision support software—also involve both primary program components. As a result, the key facilitators and barriers that we discuss below affect both program components.

The PCCC experienced lower than expected enrollment. There were a number of contributing factors to the lower enrollment, which will ultimately result in award budget reductions. First, original enrollment estimates were based on projected numbers of TCU beds as reported by the facilities agreeing to participate in the program. For one home, these estimates reflected anticipated construction and the addition of TCU beds that did not materialize. Following delayed renovations to expand its TCU, this facility dropped out of the program, bringing the total number of participating facilities from 11 to 10. Other reasons for the reduced enrollment projections included lower than expected census and initial challenges in obtaining consent from participants to share their cost data.⁵ Nursing homes also experienced a below average census due to environmental factors, such as the emergence of accountable care organizations and the changing health care market in Minnesota.

The PCCC sustained turnover in staff, especially in transition coordinators, in the first year. Facilities experiencing the loss of a transition coordinator in the first year of the program found it challenging to maintain buy-in and engagement across the team without the transition coordinator's continuous support and monitoring. PCCC program staff work closely with administrators and other staff at these facilities to develop interim plans to ensure that the more robust transition planning and work within Engage continues. Even in facilities that have had the same transition coordinator since the program began, continuous efforts are necessary to work with new team members to bring them up to speed on the program and their role in the process. Turnover also affected frontline staff awareness and understanding of the performance monitoring tools provided by the Engage tool and PCCC program staff.

a. Primary component: patient and family engagement

The immediacy of feedback and increased patient interaction enabled transition coordinators and team members to see positive impacts on patient care. The transition coordinators and team members felt strongly that the structured learning lesson approach is improving patient care and educating participants on their care, safety, and medication use. This

⁵ When the PCCC experienced lower than anticipated levels of consent, program staff determined that some facility staff did not understand that participants need only to consent to having their cost data shared and that consent is not needed to benefit from program services (participate). Once the purpose of the consent form was clarified with SNF staff, the percentage of patients consenting to share data increased to the levels expected.

focus on improving patient care helped motivate frontline staff, even if they were not involved in the larger program monitoring aspect of PCCC. Participant educational materials and Engage tools are well designed and are felt to be benefitting participants. Frontline staff in all five facilities visited found the available learning lessons were written in an appropriate tone and at the appropriate educational level. Lessons are taught by registered nurses, licensed practical nurses, and transition coordinators (some of whom are social workers rather than nurses). They reported that the lessons and the Engage tool consistently ensured more interaction with and thorough education of participants. All frontline staff felt the lessons and tools were benefitting participants and improving their care.

Staff members have to actively identify which lessons to give to participants using the Engage tool, ensuring that they make deliberate decisions about which lessons will likely be most beneficial for each individual participant. Team members also indicated that many patients were grateful to have the learning lesson materials in hard copy as part of the transition plan they are given when they are discharged to home.

The program's survey tools provided consistent and actionable feedback that helped improve communication opportunities for both staff and participants. Facility staff reported that they carefully reviewed survey results, especially the scores and reports, soon after admission to determine how to improve participant experience. Frontline staff explained that the “In the Moment” survey introduced a more formalized process to ensure that they were being proactive in asking for feedback. This immediate feedback from the surveys results in facility staff being more attentive to participant needs and addressing them earlier in a participant's stay. Managers reported that they integrated this feedback into process improvement activities, leading to prompt changes in care in response to a participant's requests. This interaction helps build trust and pave the way for staff to work more effectively with participants throughout the transition planning process.

“We did a lot of the same things [before the PCCC program], but it was just not as well coordinated. This Engage program and this structure of the components of the grant, it gave us the system for funneling everything together and creating a nice little package in terms of the communication with families. Before, when we used to communicate with families, each department might talk to them. But now it's better coordinated.”

—Participating nursing home staff

Dedicated transition staff along with the Engage tool increase patient “touches,” which in turn improve the quality of care delivered.

Although it is difficult to capture in a formal way, staff at each facility visited mentioned that the combination of the addition of another full-time staff member (the transition coordinator)⁶ and systematic use of the Engage tool has resulted in more communication (“touches”) between the staff and participants, smoother transitions to home, and

⁶ Participating facilities receive funds for one full-time equivalent position to coordinate the care transition process. Although the PCCC encourages facilities to hire one individual to lead the process, some facilities spread the responsibilities across several staff. The quality of the responsible employees and their ability to work closely with the full multidisciplinary team and patients are reportedly more important than whether the new FTE position and role is shared across several staff.

improved quality of care. Some touches, such as the “In the Moment” surveys, are structured, while others are more informal. Team members indicated that an increase in the frequency of useful conversations between staff, participants, and families begins much earlier in the process and continues as they jointly develop a realistic transition plan. The number of increased interactions varied based on TCU size; in one nursing home with a smaller TCU, the transition coordinator reported talking to every participant on the TCU every day to check in, build rapport, and ensure that the necessary coordination occurred.

The Engage tool does not include a way to prioritize learning lessons when staff identify a large number of potentially appropriate lessons for a participant. Frontline staff found that dealing with the large number of potentially valuable lessons in a limited time frame was challenging. Program staff encourage facility staff to review participants’ learning gaps and identify priorities during team meetings to ensure the most appropriate learning lessons are identified well before discharge. The Engage tool tracks the number of lessons identified for completion based on the team’s entries, then tracks the number of completed lessons for each participant.

Staff must decide how to prioritize which lessons to give and how many to cover during the stay or to include in the transition plan. The PCCC program requires facilities to review the lesson on medication safety with each participant. There is, however, variation across facilities and individual participants in terms of the other lessons taught, because many participants present with multiple chronic conditions and varying levels of ability to process information. In some facilities’ daily meetings, the team members agree on which lessons need to be completed by each participant based on their knowledge of that individual’s condition, length of stay, and ability to process information. In other facilities, the responsibility for deciding when and how many lessons to complete for a given participant falls mostly on a nurse or the transition coordinator. Some transition coordinators and nurses indicated that while they spent more time teaching than they had before the PCCC was introduced, they do not always have adequate time to teach all relevant learning lessons during a short stay.

Facilities addressed the challenge of wanting to provide many learning lessons over a short stay in various ways. One facility now has a nurse that teaches lessons during her weekend shifts, when there is often more time and families can be more readily engaged. Another facility sends home additional relevant learning lesson materials in the participant’s transition plan, even if the lesson has not been taught during the participant’s stay, to make the information readily available to participants and families once they have more time to digest the material.

There are gaps in the learning lessons available in the Engage software.⁷ Staff specifically mentioned the need for Engage to add learning lessons on important topics such as diabetes care and pain management, which are frequently necessary for the TCU patient population. Most facilities addressed the gaps in Engage lesson content by identifying materials from various online sources and creating lessons of their own. PCCC program staff and Stratis recently changed the data documentation process so that the number of facility-developed lessons are now reported and the system more accurately reflects the amount of teaching and patient engagement occurring as part of the program.

b. Primary component: transitional care coordination

Positive feedback from participants and families on the transition plan reinforced for staff the importance of comprehensive discharge planning. Staff at every facility visited reported that (1) the addition of the transition coordinator role and (2) the introduction of the Engage tool along with the transition plan it produces have helped participants transition more safely to home, be more informed about their condition, and be better prepared for what to do should their condition worsen. Staff indicated that the process of completing the elements of the transition care plan using Engage, the ability to monitor what remains to be done early in the process, and the increased engagement with patients during their stay has improved the care delivered. One SNF administrator, who was hired after the PCCC program was in place for several months, said: “The one thing I have found about this program is that they have really incorporated it into their daily system. If I wanted to get rid of it, they would revolt.” Staff members reported that participants like having all the information about their care plan and medications in one place, including information from the physical therapy team and other staff outside of the nursing unit.

“From a nursing manager piece, I like that it is a systematic approach. Before, the information was not standard or the best, depending on the skills of that nurse. Now, there is a real format. It is very complete and we can be confident that everything is there and be sure that the patient can get home comfortably.”

—Participating director of nursing

Staff at each of the facilities visited noted that prior to the introduction of the PCCC, discharge planning was less consistent and comprehensive. Participants did not get a comprehensive transition plan to take home with them that thoroughly explained what occurred during their stay, what to expect after they left, and what to do if their condition worsened unexpectedly. Now, the transition coordinator discusses the transition care

plan with the participant (or caregiver) and reviews information on the participant’s current medications—including, dosing and timing—as well as diet, therapy, and upcoming appointments. The transition coordinator also goes over an easy-to-read summary of care with

⁷ Align originally developed a small set of learning lessons in response to a Centers for Medicare & Medicaid Services program to reduce hospital readmissions and help hospitals avoid unnecessary readmissions for key diagnoses, such as congestive heart failure, pneumonia, elective total knee and hip replacements, chronic obstructive pulmonary disease, and acute myocardial infarction. These diagnoses are not necessarily those most relevant for TCU patients returning to their homes in the community who may have more pressing concerns, such as managing their pain or doses of insulin.

the participant. This written plan notes the preceding stay at a hospital and includes copies of the materials reviewed in learning lessons during the participant's stay.

Staff noted pre-PCCC discharge documents were usually shorter; more hastily prepared (sometimes typed, sometimes handwritten); and generally not reflective of important facts learned and shared with the participant and family by the full care team. Earlier plans typically were much less useful to the participant, the family, and the relevant outpatient providers. Team members mentioned that many patients find it difficult to remember all of the instructions they are given right before discharge and key family members may not have heard them. This more comprehensive description of what

"It's [transition planning] done more timely. All of the sudden we would get a discharge notice and then run in and start education. Now, we start discharge planning up-front because we have information and it is more formalized and it gets us thinking about the end discharge date [early on]."

—Participating nursing home staff

occurred during their stay and plan for the transition period—which includes easy-to-reference instructions for medication dosing and the reasons for each medication—remains with participants and their families and includes important information for providers after discharge.

Low levels of engagement and buy-in from facility leaders can negatively impact team engagement and necessary culture change. Although the transition coordinators at each facility oversee the daily use of the Engage tool, engagement from facility leaders helps push for larger culture change and team involvement. Program staff reported that when team members enter information about their own work activity into the Engage tool—for example, physical therapy plans, medical equipment needed, learning lessons conducted, and so on—they are more likely to be invested in working with and supporting the participant and the transition coordinator's work. We saw variation in the extent to which a full team is engaged in the program. For example, one facility's transition coordinator conducted almost all the data entry in Engage and worked with participants, with limited apparent support from other team members. At another facility, seven different staff members were regularly using the Engage tool. One of the facilities with less-engaged staff had experienced turnover in both its administrator and transition coordinator since the program began.

PCCC staff is working to encourage facilities to involve teams in the Engage tool through regular meetings with administrators, directors of nursing, and transition coordinators. They continue to emphasize the importance of the program in bringing about a more comprehensive and consistent approach to effective transition planning. Both frontline and program staff indicated that focusing early on the transition planning process is not yet the norm in nursing homes and this shift in orientation takes time. Multidisciplinary involvement from the day of a participant's admission is a relatively new approach for SNFs, in which the focus is often on the larger portion of their population who are long-term residents.

One replacement transition coordinator was hired from within and was already a respected team member; another facility hired a new staff member who required more time to build personal relationships and trust with other members of the team in order to be fully effective.

Program staff are meeting the challenge of turnover by working closely with facility leaders. Facilities are trying to identify champions for the program and spread program engagement beyond the transition coordinator. Program staff also help facilities develop an action plan to continue running the program during periods involving extended absences of transition coordinators.

The Engage tool has some interoperability issues with other important data sources, forcing staff to re-enter information in multiple tools. The tool does not link with any of the facilities' electronic medical record (EMR) systems, so SNF staff add the medication lists and key descriptive participant information to Engage. Multiple staff members indicated that this duplication of effort is a problem. Some facilities addressed this challenge by splitting the re-

"Oh yes, as someone new coming into the system, (Engage) is very user-friendly. And it is designed in such a way [as] to be dummy proof. . . . It is very much intuitive if you take the time to just read what it says. Anybody can go through there and figure it out."

—Participating nursing home staff

entry tasks across different departments, including medical records staff. All staff agreed that it is important to have medication data in both tools in order to reflect the most current medication list in the transition plan going home with the participants and being sent to physicians.

Although Align originally attempted to develop an interface with facility EMR systems, there were

too many systems with different requirements for this to be feasible within the program budget. However, most staff reported that the Engage tool itself is useful and for the most part very user-friendly.

In addition to the inability to pre-populate Engage with EMR data, program staff realized that Engage does not include all data needed for program monitoring and awardee reporting. Because the Engage product has many other users, the vendor was not able to customize Engage with additional fields solely to accommodate PCCC needs. Program staff created a separate data collection tool to track the additional information and now also require facilities to enter data into that tool. This results in further duplication of data entry by the transition coordinators.

c. Secondary component: education and training

The amount of additional staff training required beyond the initial all-day, on-site training session has also been an ongoing challenge. One means of facilitating ongoing staff training and education is through the monthly meetings, which are held by program staff with transition coordinators and Align staff to share best practices, discuss problems, and review new data and reports on program performance. During these meetings, transition coordinators discuss challenges they are facing, discuss how to improve performance, and share best practices. Transition coordinators and facility staff interviewed found these meetings and interactions with PCCC and Align staff very informative. They noted that PCCC staff and the Align representative are always available to help and are receptive to making changes to improve processes and achieve program goals.

PCCC staff also train the transition coordinators to function as on-site educators for other staff members involved in each facility's transition planning process and to respond to questions from staff about using the Engage tool. Staff turnover across the transition care team impacts the amount of training needed. Align still conducts full on-site training for new transition coordinators, but other new staff members are trained by transition coordinators supported by PCCC staff. New staff might require training in various transition-related responsibilities, such as entering data and plans in Engage related to physical therapy, medical equipment, or medications.

Most facility staff reported that the Engage tool and the initial all-day training provided by Align and PCCC staff was very helpful. Some suggested that it would have been more helpful to have a longer testing environment to practice in before using the live tool, while others indicated that it was helpful to begin training several months in advance of the program going live. PCCC staff also reported that when there was too much time between training and program launch, retraining was sometimes necessary.

d. Secondary component: quality improvement and workflow process redesign

Many facility managers are still learning how to use information from Engage and PCCC performance reports to affect change. Facility administrators and transition coordinators report that some of the process improvements they are implementing require time and, ultimately, a change in culture to be sustainable. At most facilities, transition coordinators and administrators mentioned that they share the Engage reports on participant satisfaction and experience with their TCU team, as well as during quality improvement meetings. Some administrators and transition coordinators also mentioned that they would like to see more reports with data specific to their facility, rather than in aggregate, on more program performance metrics. Some of these metrics are reported in aggregate by Align during monthly transition planning meetings. This additional facility-level performance reporting could help facilitate efforts to shift organizational culture across all disciplines towards earlier planning for transitions.

3. How does the awardee make decisions about program-related changes?

PCCC program staff, in conjunction with their advisory board and Stratis, developed a set of performance metrics that capture process metrics, such as measures on success rates of post-discharge calls and participant follow-up appointments with providers. They monitor the timeliness of tasks such as the percentage of comprehensive transition plans sent to providers within one business day of participant discharge. They also monitor data on the three satisfaction survey questions asked during the first post-discharge phone call. Program staff carefully monitor these metrics as well as progress being made towards meeting established targets using an internal dashboard. Program leaders make decisions to refine data collection, reporting, and training activities in conjunction with their board and appropriate frontline and contractor staff (Align and Stratis). We observed many interactions between program staff, Align, Stratis, and participating facilities. There appeared to be a clear focus on continuous program refinement and monitoring. For example, the program staff decided that satisfaction surveys answered by

caregivers would also be valuable, particularly if the caregiver had been actively involved in the learning lessons and transition process. These surveys are now documented and included in performance reports as part of the total satisfaction scores from participant satisfaction surveys.

After identifying patterns and potential opportunities for improvement in documentation or transition program activities, program staff raise issues at monthly transition coordinator meetings and during calls and visits to facilities. Program staff discuss possible explanations with involved parties and work with those involved at Align, Stratis, and individual facilities to explore opportunities for improvement.

The program staff gave several examples of how program monitoring led to discussion with CMMI and eventually refinements in the program. After reviewing measures with Stratis and CMMI, PCCC staff realized that the program was meeting several targets earlier than anticipated and worked with CMMI to identify new targets. PCCC staff reported that CMMI has been flexible and has allowed the program to adapt performance measures to better reflect knowledge and experience gained during implementation. For example, PCCC staff discussed changing the measure to collect the percentage of participants with follow-up appointments after discharge to include those with both primary care and specialty providers. As previously described, the metric counting patient satisfaction results was also refined and now reflects surveys completed with caregivers in addition to those completed with participants. Rather than changing the structure of the program, changes reported during our visit focused on improved data collection and documentation.

Stratis reported that developing and refining program measures with PCCC following implementation was more time-consuming than originally envisioned, in part because CMMI did not require a detailed evaluation plan to be included in the awardee application. As a result, CareChoice left the refinement of performance measurement and evaluation planning to begin after receiving the award.

Stratis will begin to determine changes in readmission and total cost of care once claims data are available from Medicare and the two Medicare Advantage plans that agreed to share data. In the interim, the program is monitoring participant self-reported readmission rates gathered during the post-transition phone calls. Stratis reported working closely with PCCC staff to clarify the amount of time Stratis can continue to dedicate to this activity, given the time already spent in developing and refining the initial performance metrics and data collection process for the evaluation.

4. To what extent has the awardee begun to plan for or implement payment reforms?

PCCC and CareChoice leaders are in the early stages of developing a potential payment model. Two Medicare Advantage plans that agreed to share data, Medica and U-Care, also agreed to work with CareChoice to develop the payment model. The original proposal was to develop a per diem add-on to the Resource Utilization Groups (RUGs) or health plan rates (referred to as “RUGs Plus”) for payer consideration in order to cover the costs of more robust planning and coordination for transition in care. The add-on payment would cover the cost of the

transition coordinator; the software used to lead the planning process and any related supplies; and the specialized training in program components, including Project RED. In its fourth quarter report submitted in August 2015, PCCC leaders reported that in addition to identifying a RUGs Plus payment, they also intend to develop a method to incentivize facilities through a shared savings model. In this model, payers would set aside a portion of savings earned through the program to be shared between the facility and the payer, so long as facilities met certain quality standards.

Once claims data are available, CareChoice will further discuss how to determine the appropriate additional payments and calculations for any shared savings with payers—after which a timeline for finalizing the proposed payments arrangement will be identified.

CareChoice has also targeted other payers to engage in payment model discussions—the Minnesota Department of Human Services (the agency responsible for the state’s Medicaid program and Aging Services Division) and two smaller commercial payers—with the goal of bringing these payers into the payment model development discussions.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we concluded that a rigorous impact analysis was feasible. Based on our assessment of program evaluability, we propose a difference-in-differences design for impact evaluation, in which we will compare treatment group outcomes with those of an external, matched comparison group. The treatment group includes post-acute Medicare, Medicaid, and dually eligible beneficiaries who have been discharged to home or an assisted living facility from one of the 10 participating SNFs. The comparison group includes post-acute Medicare, Medicaid, and dually eligible beneficiaries who have been discharged to home from a set of matched, nonparticipating SNFs that are similar to participating SNFs.

E. Next steps

We look forward to continuing to work with CareChoice for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

As stated above, the impact team will use a difference-in-differences design to test for intervention effects among participants at participating SNFs relative to a comparison group of patients from nonparticipating SNFs. To construct the comparison group, the impact team will select comparison SNFs that are similar to intervention SNFs within the five counties in Minnesota where the intervention SNFs are located. We have confirmed with the awardee that we can include nonparticipating SNF members of CareChoice in the comparison group, if they were not involved in the Resident Centered Care Connections pilot program that preceded the PCCC program. To ensure similarity with intervention SNFs, we will eliminate from the comparison SNF pool those SNFs that are for profit, hospital based, not Medicare or Medicaid certified, and have occupancy rates of less than 80 percent. We will use propensity score matching to select comparison SNFs that are similar to participating SNFs using Nursing Home Compare data (overall five-star rating), claims data (90-day readmission rates), and the Minimum Data Set (RUGs) – **all** from 2014, the year prior to the intervention's start. If the propensity score model does not converge due to the small number of participating SNFs, we will use exact matching. Once comparison SNFs have been selected, we will apply the awardee's inclusion criteria to select beneficiaries from comparison SNFs who were discharged to home after an acute hospitalization. We will explore the possibility of using inverse probability weighting at the beneficiary level in the outcome models to account for case mix between intervention and comparison SNFs.

If the total number of participants who are covered by Medicaid is sufficient to merit analyses, we may also work with Medicaid data. At this stage, it appears that the total number of participants covered by Medicaid may be under 250 individuals, so it is possible that the sample size will not merit further analysis. Our intent is to also include dually eligible participants in the analysis. However, given the small numbers of dually eligible participants and the awardee not collecting participants' social security numbers, it may not be possible to conduct separate analyses on dually eligible participants.

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APPENDIX B.8

COMMUNITY CARE OF NORTH CAROLINA

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REPORT

APPENDIX B.8

HCIA Round Two Evaluation: Community Care of North Carolina

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–November 23, 2015)

Successes

- Community Care of North Carolina recruited and trained staff from 123 pharmacies to provide a comprehensive initial pharmacy assessment (CIPA) of patients prescribed chronic disease medications.
- The awardee established an initial payment model to motivate pharmacists to serve as active members of a patient's medical home.
- Performance monitoring data were used to provide targeted, individualized technical assistance to pharmacies challenged by program requirements.

Challenges and strategies to address them

- Incorporating CIPAs into the pharmacy workflow has been a major challenge. The awardee has provided intensive technical assistance to pharmacies that have struggled the most (that is, those that have not completed or have barely completed CIPAs). The assistance addresses barriers to completing the CIPAs such as entering data into PHARMACeHOME, Community Care of North Carolina's information technology system, and identifying which patients to target for what services.
 - Implementation data collected by the awardee indicates that it is focusing on developing a standard definition for the CIPA and on ensuring that participating pharmacists understand the different levels of program services. Community Care of North Carolina plans to institute the standards in 2016.
- Community Care of North Carolina is addressing the ongoing challenge of capturing patient-pharmacist interactions in PHARMACeHOME through linkages with pharmacy management systems already used by community-based pharmacies.

Lessons learned

- The first year of implementation confirmed what a major change the program has created for the pharmacies. Because all of the pharmacies and processes are set up to dispense and bill for medications, the shift to a more patient-centered approach with value-based payments has been massive and is best done iteratively.
- Bringing 123 pharmacies into the program all at once was too burdensome for Community Care of North Carolina staff. For the Year 2 pharmacies (n = 102), the awardee plans to more incrementally engage the pharmacies through regional trainings and individualized technical assistance.
- At first, some providers were reluctant to have pharmacists play a more active role in patient care, but most providers gradually accepted and have come to appreciate this level of engagement from pharmacists.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on November 23, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round 2 of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this five-year evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Community Pharmacy Enhanced Services Network (CPESN) program, which is being implemented by Community Care of North Carolina. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Community Care of North Carolina's CPESN program, including initial implementation experiences and initial challenges to and successes with enrollment. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to Community Care of North Carolina's headquarters and to selected participating pharmacies; and a review of awardee reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Community Care of North Carolina's program and workforce, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of Community Care of North Carolina's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

Community Care of North Carolina is a Medicaid medical home program responsible for developing and testing the CPESN program. Community Care of North Carolina serves more than 1.4 million enrollees in Medicaid and North Carolina Health Choice for Children (comprehensive health coverage program for low-income children whose family makes too much to qualify for Medicaid) through a statewide system of 14 provider networks that comprise over 1,700 primary care practices and 5,000 primary care providers,¹ as well as hundreds of care managers, other clinicians, and support staff. Community Care of North Carolina is using its network as a launching point from which to provide the CPESN services to all 1.8 million Medicaid beneficiaries in the state—that is, more than those in the Community Care of North Carolina network.

The CPESN is an innovative service delivery and payment model that integrates the care management activities of community pharmacies into community primary care practices. Its purpose is to extend the role of pharmacists such that they thoroughly review all medications prescribed to certain patients while working with them and their broader health care teams to resolve drug therapy problems (DTPs), optimize medication use, and improve overall health outcomes. To link this enhanced care to the payment model, pharmacists are required to enter their interactions with patients into PHARMACeHOME, an existing care management system that Community Care of North Carolina adapted to the program.

Because pharmacists have historically focused on dispensing medication without interacting very much with the provider who prescribed it or with the patients who did not have questions about it, the CPESN involves a major shift in the pharmacist's role in the service delivery system. The program is also being implemented at multiple levels (statewide, network, individual pharmacies, providers, and patients), and there are facilitators and barriers unique to

¹ See <https://www.communitycarenc.org/our-networks/>.

each of those levels as well as to the program components. For all of these reasons, the CPESN is a particularly complex effort. We describe it in detail below.

1. Program goal and components

The goal of the CPESN is to improve clinical outcomes and reduce total annual health expenditures by at least \$30 million by 2017.² The awardee's theory of change/theory of action (TOC/TOA) is that if pharmacists have an incentive to participate more actively in patient care, they will enable patients to receive better integrated and coordinated care that reduces the need for emergency department visits and hospitalizations. Community Care of North Carolina expects to achieve this goal through four program components:

1. Create through an iterative process a payment model that gives participating pharmacies incentives to address gaps in patient care
2. Leverage an integrated care management and medication management information platform
3. Determine the requisite workflows for, communication patterns of, and task sharing between community pharmacies and others participating in patient care, and provide the training to institute these changes
4. Ensure continuous quality improvement

Component 1: Payment model. Community Care of North Carolina's proposed payment model is the primary component of the CPESN program. The awardee believes that it will drive all changes in the service delivery model that are conveyed through the remaining three program components. The payment model is also a major change for pharmacies, so to implement it fully, it must be refined incrementally. For instance, pharmacists have traditionally dispensed medication and received payment for it without being reimbursed for other services they provide, such as the time they spend counseling patients or resolving DTPs. To address this issue, Community Care of North Carolina has started to align its payment model with three levels of services, each having a different intensity:

1. **Augmented dispensing** involves the pharmacist asking patients directly if they have questions about their prescriptions. For this activity, which should take no more than 90 seconds, a pharmacist receives a minimal payment per member per month (PMPM).
2. **DTP assessment and follow-up** involves the pharmacist reviewing the list of medications a patient is receiving and ensuring that there are no DTPs (for example, drug-drug interactions or allergies) that need to be addressed. If there are DTPs, the pharmacist talks with the patient about the problem and follows up with providers as needed—an activity that lasts less than 10 minutes.

² Program aim cited in driver diagram of Community Care of North Carolina operational plan.

3. **The comprehensive initial pharmacy assessment (CIPA)** consists of the “enhanced services” that the awardee hopes to have pharmacies deliver to patients who are most at risk for medication-related complications. This level of assessment involves an intensive review of prescriptions (which can sometimes be as many as 30 to 40 for patients with multiple chronic conditions), contacting providers to discuss any identified problems, and working with patients to resolve problems. The initial CIPA typically requires at least 30 minutes of the pharmacist’s time and the follow-up requires one to three hours, including the time it takes a pharmacist to enter data into PHARMACeHOME. Once the initial CIPA is complete, Community Care of North Carolina expects pharmacists to follow up with patients for the next 12 months. The payment model includes reimbursement each month.

Component 2: Integrated information platform. The awardee is leveraging 14 existing regional primary care provider networks to enhance care delivery by involving pharmacists more directly in patient care. Within each regional office, there are already staff who are part of the network and who provide consultation services to provider practices, including case management, nursing, and pharmacy services. These regional staff have been an integral part of Community Care of North Carolina’s effort to provide training to community-based pharmacies and one-on-one assistance as they incorporate the CPESN into their workflows. The network also has a case management health information technology (health IT) system that Community Care of North Carolina is using as the foundation for the system being used by pharmacies. Although this system was not created for the purpose of recording a pharmacist’s interactions with patients, it provided the initial infrastructure on which PHARMACeHOME is based.

Component 3: Best practice model with training. The third program component is to test (and thereby determine the best models for delivering) the enhanced program services and to train pharmacists throughout North Carolina so that implementation is statewide. Because care coordination is central to the CPESN, pharmacists become active participants in the patient-centered medical home care team. With this shift in the pharmacist’s role, the awardee has had to collect and analyze data to gain a greater understanding of effective workflows and communication patterns (for example, between pharmacists and primary care providers or patients) and the critical role of health IT. CPESN will therefore enhance the role of pharmacists in the ongoing management of patients with chronic diseases. In addition, Community Care of North Carolina hypothesizes that, as pharmacists interact with patients, they will provide medication reconciliation to avoid potential drug-drug interactions and to ensure that patients understand both their medications and the importance of complying with their prescriptions.

Component 4: Continuous quality improvement. Continuous quality improvement is happening through the awardee’s significant data collection efforts and in partnership with the University of North Carolina’s (UNC) Eshelman School of Pharmacy. The awardee has been collecting data on implementation and has focused in Year 1 on the level of activity or engagement across the participating pharmacies in order to establish a more standard approach to patient care. For pharmacies identified as not engaged (that is, no patients were given a CIPA), UNC School of Pharmacy has provided intense technical assistance to troubleshoot issues and help change the pharmacies’ workflows to incorporate the CIPAs.

2. Participant enrollment

Community Care of North Carolina is targeting two groups of participants—(1) the pharmacists who own or are employed by community-based pharmacies and (2) eligible Medicaid, Medicare, dually eligible, and CHIP enrollees who have one or more chronic conditions (that is, they are prescribed at least one chronic condition medication) and one or more medication optimization needs, such as ensuring that medications are not contraindicated (these needs will vary by patient).

a. Pharmacies and pharmacists

Community Care of North Carolina kicked off the enrollment process by releasing a call to all community-based pharmacies in the state. The awardee then identified 123 pharmacies that responded to the call and completed the enrollment process (for example, signing agreements with the state to participate in the payment model). Of these, 119 pharmacies are independently owned and operated, including several that belong to the same owner but that are not national chains. The remaining 4 pharmacies are part of federally qualified health centers (FQHCs).

Measured by the number of staff, the pharmacies range in size from just one pharmacist who serves a few hundred regular patients to several pharmacists who serve thousands of patients. The level of services each pharmacy provided before CPESN also varied a great deal. Some were already offering enhanced services, such as home delivery of medications, counseling, linkages with local provider electronic medical records, special medication packaging, and so on. Once pharmacies agreed to participate and completed the necessary documents, they received training on how to use PHARMACeHOME. This IT system captures encounter information for patients who receive the most intense CPESN services. In the fall of 2015, Community Care of North Carolina enrolled an additional 102 pharmacies for a total of 225 participating pharmacies. Community Care of North Carolina plans to enroll additional pharmacies in each year of the project.

b. Patients

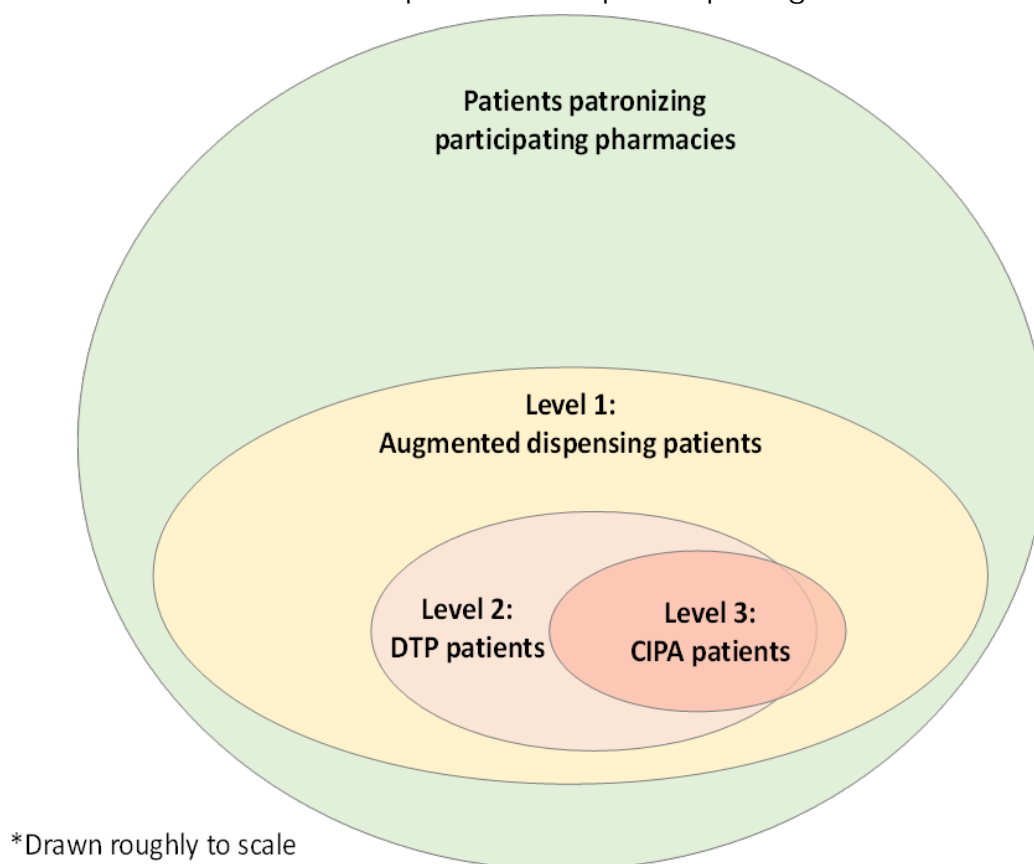
The patients eligible for the CPESN intervention include all Medicaid, Health Choice, and dually eligible beneficiaries in the state. Medicare beneficiaries are being added as the IT linkages between Community Care of North Carolina's system and the community pharmacies increase. Figure 1 shows the patient population for pharmacies participating in CPESN. The largest circle represents the universe of patients who patronize the pharmacies participating in CPESN. Not all patients who patronize the participating pharmacies will receive the intervention. Among the patients patronizing the CPESN pharmacies, there are three levels of intervention.

The first level is illustrated by the circle labeled “Level 1: Augmented Dispensing Patients.” These patients are also the “attribution panel.” The attribution panel, which is based on prescription claims information from the previous three months, consists of patients who obtained a chronic medication prescription from one of the 123 participating pharmacies and who received 80 percent of their medications from that pharmacy. The attribution panel accounts for approximately 123,000 patients. These patients receive augmented dispensing services (that

is, the least intensive of the three levels of services). Common examples of these services, which are provided to patients with complex care needs, include home delivery of medications, medication synchronization, and blister packaging. Patients with less complex needs may benefit from enhanced services such as multilingual pharmacy staff or working with a physician on alternatives to medications that require prior approval.

For the pharmacies, Community Care of North Carolina provides a list of patients in the attribution panel and a global risk score for each patient, which summarizes the patient's risk for key adverse outcomes (for example, risk of hospitalization or complications). This risk score was designed to help pharmacists prioritize the patients to contact for the intervention. Patients with the highest risk scores are flagged so that pharmacists know to provide these patients with the most intense services.

Figure 1. Patient attribution for pharmacies participating in CPESN



Source: Provided by the awardee

Note: Each pharmacy has its own management system for dispensing drugs. Community Care of North Carolina gets information on which Medicare beneficiaries are within a pharmacy's panel from data on fill history from five of the most common pharmacy management systems. Of the 123 Year 1 pharmacies, 109 pharmacies shared their fill history with Community Care of North Carolina. The remaining 14 pharmacies are implementing the program with Medicaid, Health Choice, and dual eligibles only until the sharing of fill history of prescription drug plans enables Community Care of North Carolina to add the Medicare population.

The two remaining groups of patients, represented by the two smallest circles, are the focus of the CPESN. These groups include patients with the highest risk levels (for example, patients who have multiple chronic conditions managed with drugs and serious mental illness) who need the most intense, ongoing services. The circle labeled “Level 2: DTP patients” includes patients who are found to have one or more numerous DTPs requiring resolution and long-term monitoring. The expectation is that the pharmacist will follow up to resolve DTPs by talking and working with patients and their health care team. This interaction is considered moderately intense, requiring about 2 minutes to 10 minutes of the pharmacist’s time. As of November 30, 2015, Community Care of North Carolina estimated this group to include 10,000 to 15,000 patients, or approximately 10 percent of Level 1 patients.

The smallest circle, labeled “Level 3: CIPA patients,” are patients who require the greatest effort from pharmacists and are those with the highest level of risk. Their CIPAs can require up

“I will say they [the patients for this program] are the most difficult ones, the ones that I have been working on before [Community Care of North Carolina] to make sure that they receive their medications on time and take them when they are supposed to. This is a very daunting task because some of them, when I look, I just don’t know how much of movement I can make in the change in their health care. So I will say they live in a rural community, so it’s low income, it’s low health literacy. So you are working towards maybe health not being the most important thing.”

— *Participating pharmacist*

to three hours of the pharmacist’s time, including entering the encounter data into PHARMACeHOME. As of November 30, 2015, the approximate number of patients identified as being in the group that requires ongoing, intensive community pharmacy care management services was 4,000 (approximately 3 percent to 4 percent of the augmented dispensing patients from Level 1). These patients tend to have numerous prescriptions, often for multiple chronic conditions such as mental illness, asthma, cardiovascular disease, or diabetes.

Pharmacists are finding that these patients typically require a lot of their time and attention. They also tend to be among the most difficult patients to convince to change their behavior.

Enrollment process. The pharmacy staff receives the list of patients from Community Care of North Carolina on a monthly basis and then contacts the patients for the first time to provide or schedule the CIPA. (However, the pharmacies often know their patient population well, so they may already have an established rapport and will connect with the patient at their next visit). Each participating pharmacist has been trained by the awardee to provide comprehensive care to patients who are identified as eligible for the program. The pharmacist, with support from pharmacy technicians, maintains contact with each patient (for up to a year) to review whether the patients are taking their medications correctly (for example, correct time of day, with or without food), assess DTPs and identify opportunities for optimizing therapy, help patients understand their medication regimen, develop a pharmacy care plan, and communicate or coordinate the care with other care team members. Patients can be contacted either as they come into the pharmacy to fill a prescription or through an appointment made over the phone for them to come in and meet with staff. Some pharmacists have visited the homes of patients who cannot come into the pharmacy but who have such complicated medication regimens that phone counseling is insufficient. The CPESN also includes follow-up with each patient for at least a

year to make sure that all medication issues are resolved and that the patient continues to understand his or her prescriptions. Other key characteristics of the CPESN are described in Table 1.

Table 1. Community Care of North Carolina: CPESN characteristics at a glance

Program characteristic	Description
Purpose	CPESN is an innovative service delivery and payment model that integrates medication management strategies implemented by community pharmacies into the interactions between patients and community pharmacists while giving pharmacists the incentive to address gaps in care.
Components	CPESN has four components: <ol style="list-style-type: none"> 1. Create a payment model that provides pharmacies with incentives to address gaps in patient care (primary) 2. Leverage an integrated care management and medication management information platform (PHARMACeHOME) to enhance care delivery by involving pharmacists more directly in patient care (primary) 3. Determine best practices for delivering the enhanced program services and training pharmacists throughout North Carolina so that implementation is statewide (primary) 4. Implement continuous quality care improvement across all participating pharmacies to establish a more standard, lower cost approach to patient care (primary)
Target population	Medicaid and Medicare beneficiaries who have one or more chronic medical conditions treated through medication or who are identified by either a care team member or the pharmacy itself as needing intervention
Theory of change/theory of action	By enhancing the role of pharmacists in the ongoing management of patients with chronic diseases, medical costs can be reduced and the quality and coordination of care can be improved.
Payment model	Per capita care management payment, value-based purchasing A mix of PMPM and encounter-based payments for Year 1, with a gradual transition to value-based payments and 100% risk-based PMPM by the end of Year 3
Award amount	\$15,634,150
Launch date ^a	3/1/2015
Setting	Participating community pharmacies
Market area	Patients served by participating community pharmacies
Market location	North Carolina
Core outcomes	Improved clinical outcomes and a reduction in total annual health expenditures by at least \$30 million by 2017

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by Community Care of North Carolina to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visits to Community Care of North Carolina and selected

participating community pharmacies (from September 30 through November 23, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

The overall purpose of the site visits (that is, several to the Community Care of North Carolina headquarters and the UNC School of Pharmacy, and visits to three pharmacies) was to collect detailed information on the following: staff and stakeholders' experience, and their progress to date in implementing CPESN; changes to CPESN; facilitators of, challenges to, and barriers to implementation; and updates to the payment model. Because the CPESN is such a complex innovation that is being implemented at several levels, we conducted several telephone interviews and site visits. During the visits, we interviewed Community Care of North Carolina's key staff members, including the director, program coordinators, a data manager, and partners assisting with training and the internal evaluation. We also interviewed pharmacists and pharmacy owners who are implementing CPESN within their community. We selected three pharmacies based on differences in the following:

- Patient volume (March 2015 to August 2015)
- Percentage of completed CIPAs
- Organizational setting (community pharmacy or FQHC)
- Geographic location (rural or urban)

We visited two pharmacies in rural regions of North Carolina (Jackson and Halifax) and one in an urban setting (Durham). Each has had varying levels of opportunities to conduct the CIPAs and had different levels of success completing the CIPAs. The pharmacies in the rural settings have relatively small patient volumes, while the pharmacy in Durham fills approximately 2,000 to 3,000 prescriptions per month for mostly Medicaid beneficiaries. This pharmacy completed 9 percent of its CIPAs for eligible patients, mostly because of its overall volume and the fact that it has only one clinical pharmacist dedicated to providing enhanced services. The two rural sites include one pharmacy with a low patient count that completed 18 percent of its CIPAs for eligible patients as of August 2015. The other is an FQHC-based pharmacy with a low volume of attributed patients and a one percent completion rate for CIPAs.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components and research questions describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this report on Community Care of North Carolina's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Community Care of North Carolina's implementation process during Year 1 has been highly effective. The awardee has engaged more pharmacies than it anticipated, delivered training to pharmacists statewide, established a system for data collection, and continually monitored and revised both its service delivery and payment models.

As of October 2015, Community Care of North Carolina has successfully enrolled 225 pharmacies and trained their staffs to serve as the foundation for implementing the program. The awardee invited pharmacies from across the state to participate in the program. Although more than 150 initially expressed an interest, 123 eventually signed the agreements with the awardee to participate in the new payment system. One of the challenges facing Community Care of North Carolina at the start was that it rolled out the program in all 123 pharmacies at once, which overwhelmed its health IT system and put a huge burden on all resources, as well as produced a greater need for training among pharmacists than expected. But the awardee did hold regional trainings that included its partners from UNC School of Pharmacy and staff from the regional network offices. Each network has a pharmacist and at least one case manager who were involved in providing technical assistance as the pharmacists began learning the PHARMACeHOME system and using it to manage patient care. After this initial training on the system, Community Care of North Carolina offered follow-up, customized assistance for specific challenges that pharmacies had in implementing the program. This training was provided by Community Care of North Carolina staff or UNC partners, using data from their extensive collection to review a pharmacy's performance and focus on ways to better integrate CPESN into a pharmacy's workflow. In Year 2, the awardee plans to (1) focus on standardizing the services to be provided as part of a CIPA and (2) determine the essential elements present in pharmacies that have the highest level of performance (that is, have completed the greatest proportion of CIPAs).

"This is a big change for [a] community pharmacy. So, my team . . . was focused on the non-engaged pharmacies. And I came up with an action plan to go do site visits, for conducting follow-ups with those pharmacies, tracking their documentation, and then doing another follow-up with them. And we've been giving them a lot of one-on-one attention."

— UNC investigator

Community Care of North Carolina began to enroll patients on March 1, 2015, but pharmacies vary in the extent to which they are reaching the patients on their attributed patient lists. The direct number of program participants (defined as the total number of unique participants who have received services directly from a participating pharmacy) reported to the implementation and monitoring contractor is the number of participants who are receiving augmented dispensing services (Level 1 in Figure 1). However, the awardee is focusing its intervention services on patients receiving DTPs (Level 2) and CIPAs (Level 3). The quarterly reports do not include an estimate of program participants for whom the community pharmacists provide DTPs or CIPAs. However, as of November 2015, Community Care of North Carolina estimates that the number of program participants receiving direct services is approximately 10

percent to 15 percent of augmented dispensing patients. The reach of participating pharmacies varies across all levels of the intervention due to the different pharmacy capacities and patient populations. Community Care of North Carolina does not have any indirect program participants.

The awardee established an initial payment model in which PMPM payments are used as an incentive for pharmacy engagement. Over time, the awardee will incorporate value-based payments such that pharmacies will be paid higher amounts if they complete a greater proportion of CIPAs for eligible patients.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address these challenges (by component), including the effectiveness of these strategies?

Strong leadership at Community Care of North Carolina has been critical to the program's successful implementation. The staff who implemented the program are highly committed to the model and to working together to identify successful strategies for addressing challenges. Project leaders at Community Care of North Carolina's headquarters in Raleigh and partners at the UNC School of Pharmacy are trained pharmacists, many of whom have clinical pharmacy training or have worked as community pharmacists. The staff are also trained as researchers, so they are aware of the need to monitor the program over time and to identify ways to improve it. The reports that Community Care of North Carolina has submitted to the implementation and monitoring contractor make it clear that the awardee has implemented the program effectively, assessed the success of its strategies for addressing challenges, and continually improved the program by applying the lessons it has learned as it moves forward with the program. The challenges to and facilitators of implementation overall and for each program component are described below.

A major challenge facing the awardee in Year 1 is the variation in the level of engagement among participating pharmacies. In the first three months after the program was launched (March to May 2015), anywhere from one-third to a half of the pharmacies were not providing the most intensive services during any given month, and were categorized as partially engaged. About one-fifth of the pharmacies did not provide any intensive services and were categorized as non-engaged (Table 2). The reasons for this lack of engagement have little to do with a slow ramp-up, because the program was rolled out in all participating pharmacies in March 2015 after all of them had received training. Findings indicate that the barriers to engagement tend to relate to the disruption of the workflow, limited capacity to provide intensive services, and the effort required to enter data in the PHARMACeHOME system. Although the non-engaged pharmacies provided less intensive services in Year 1, the project team (that is, Community Care of North Carolina and UNC) measured engagement in CIPAs because pharmacies must re-evaluate their workflow and resource allocation in order to participate in this most intensive aspect of the program.

Table 2. Pharmacy engagement from March to May 2015

Level of engagement	Number and percent of pharmacies			
	March 2015	April 2015	May 2015	Q3 overall
Non-engaged pharmacies	44 (36%)	58 (47%)	51 (42%)	26 (21%)
Partially engaged pharmacies	27 (22%)	31 (25%)	19 (15%)	21 (17%)
Engaged pharmacies	52 (42%)	34 (28%)	53 (43%)	76 (62%)

Source: Awardee's progress report, third program quarter.

Note: Non-engaged is defined as no community pharmacy CIPAs completed; partially engaged is defined as pharmacy having completed one to two CIPAs; fully engaged is defined as pharmacy having completed three or more CIPAs.

Pharmacies have struggled to recruit and enroll patients. None of the three pharmacies we visited—including the one we selected because of its relative success in providing CIPAs—has reached a high proportion of eligible patients. The main reason for this is related to the pharmacies' capacity and workflow. Two of the pharmacies have just one pharmacist who could take responsibility for the CPESN. Both pharmacists were reluctant to engage pharmacy technicians in the process and found it difficult to determine how to incorporate the CIPA into their workflow. Even for the third pharmacy, which has the staff and systems in place to provide a CIPA, only 9 percent of the high-risk patients (that is, 289 completed CIPAs) received these enhanced services from March to August 2015. The primary reason for this is the sheer number of Medicaid patients served by the pharmacy—more than 3,000 a month. Although this pharmacy did not enroll a large percentage of patients, it did build a new work area to facilitate close communication between pharmacists and pharmacy techs as they assess and flag patients for whom a CIPA would be appropriate.

Unfortunately, capacity remains a challenge, and HCIA R2 funding does not cover an increase in staff specifically for community-based pharmacies. The payment model provides incentives to pharmacies to build their capacity, but the payments are limited at the start, and until they can serve more patients, these payments are not likely to provide sufficient base funding to add staff. Aware of these challenges, the awardee is taking a hands-on approach to addressing them by providing individualized technical assistance to pharmacies.

a. Primary component: create payment model

As noted, payment reform is the first primary component in the CPESN (see Section A). The awardee has made progress in implementing changes to its payment system and will be making a large shift in January 2016 as it moves pharmacies closer to value-based payment. The payment model and the changes planned during Year 2 are described in Subsection 4.

b. Primary component: integrated information platform

Existing IT systems do not adequately capture CPESN services. PHARMACeHOME, the second primary component in the CPESN, was adapted for the program by Community Care of North Carolina from its existing case management system. This statewide pharmacy-based IT

system is the platform through which participating pharmacies allocate payments and monitor the services provided to patients.

Because this system was designed for multi-licensure primary care case management and coordination, not for tracking CPESN service delivery, users have encountered numerous challenges related to incorporating data entry into their workflows. Although pharmacists may meet with a patient for only 15 minutes and complete a CIPA, it can take an hour or more to enter the data into the system, which is a strong disincentive to using PHARMACeHOME. Pharmacists must manually complete a matrix of the medications a patient is taking, by dosage and frequency; this detailed information should be automatically populated in the system. Community Care of North Carolina has gradually restructured the system and plans to continue to improve it as the program is further implemented, but limited usability of the system does seem to be affecting the extent to which some pharmacists are entering information about their patient encounters.

Despite these shortcomings, the advantages to using the existing system are clear. It allowed Community Care of North Carolina to leverage the existing infrastructure from the network and tap into the Community Care of North Carolina health information exchange, which houses patient-level data from all providers in the network (for example, physicians, nurses, case managers, and social workers). The awardee adapted the case management system to initially meet the needs of tracking and monitoring pharmacy interactions with patients. Part of the awardee's initiation of the innovation was to train pharmacists and other pharmacy staff on data entry in the system. Most of the training for the system was conducted via webinar. Respondents shared that this mode was effective in helping them learn the system but that the data entry was "clunky" and "slow."

A major barrier to implementation has been the difficulty in incorporating both the CIPA itself and the data entry into the pharmacy's workflow. Of the three pharmacies we visited, only one had a clear and distinct process for ensuring that eligible patients would receive a CIPA and appropriate follow-up services. One of the other two pharmacies we visited found a way for the pharmacist to add the data review and the CIPA to his or her workflow without support from other staff (though the pharmacist had completed very few CIPAs), while the other had such limited capacity with only one pharmacist on staff that the pharmacy was unable to devote sufficient time to incorporating the CIPA review into the workflow (and was a non-engaged pharmacy as of our visit).

It is important to understand that the program has caused a massive shift in the pharmacist's role and in the pharmacy workflow. The pharmacist has typically played a relatively passive role in a patient's care, counting and dispensing medications prescribed by a provider and generally talking to patients only if they have questions. Under the CPESN, however, the pharmacist must actively engage in assessing care with regard to medications. There is a list of over 70 DTPs that CPESN pharmacies must assess for their patients, along with conducting an initial assessment of the patients' medications, following up with providers to address problems, and tracking patients over time to ensure that DTPs are resolved.

Given the implementation challenges posed by PHARMACeHOME, Community Care of North Carolina is exploring other systems that can interface with CPESN such that key care information can be exchanged with pharmacy management systems and other IT systems involved in enhanced services delivery.³ Data that are currently being piloted for exchange include patient attribution or linkages, risk for poor outcomes metrics, DTP lists, and pharmacy care plans, among others. Participating pharmacies will be allowed to exchange information for the purposes of receiving payment and reporting their activities rather than having to document their activities directly in PHARMACeHOME. Community Care of North Carolina expects to pilot the new approach in spring 2016.

c. Primary component: best practice model and training

In terms of training in Year 1, Community Care of North Carolina has given priority to providing individualized assistance by phone or in-person visits to pharmacies that had difficulty getting started. UNC provided intensive assistance to pharmacies that enrolled very few patients or none at all. The assistance included deploying a pharmacy student intern who helped pharmacies understand how to use the attribution lists, how to better use PHARMACeHOME, and how to improve the documentation of patient care. To test the effectiveness of this individualized technical assistance, UNC staff provided it to half of the pharmacies that were struggling ($n = 11$) but not to the other 12 that were performing at the same level. The team is analyzing the data it collected from all 23 pharmacies to determine the extent to which the intensive assistance improved pharmacy performance.

With the new pharmacies joining the program in late 2015, the awardee is taking a modified approach to training. It has conducted regional information sessions to walk the pharmacies through the program and has made the training more straightforward. Community Care of North Carolina has also been continuously revising the PHARMACeHOME system so that it is less time-consuming and burdensome for the pharmacies. In the coming year, the awardee will focus on capturing data on how the high-performing pharmacies are providing the CIPA, what services it includes, and how long it typically takes to complete a CIPA for different kinds of patients. The awardee recognizes that the services provided via a CIPA must be standardized in order for Community Care of North Carolina to achieve the goal of impacting the costs of care. Community Care of North Carolina plans to comprehensively define a CIPA, compared with the resolution of DTPs, and ensure that pharmacies know the difference between these services and the payments they will receive for each.

³ Pioneer, for example, is software used by a majority of pharmacies in North Carolina for tracking and monitoring the dispensing of medication.

d. Primary component: continuous quality improvement

Community Care of North Carolina and its partners at the UNC School of Pharmacy have actively worked with participating pharmacies to identify and address challenges. Individualized

“We’re very much in a posture of plan-do-study-act. We very much believe in it culturally here, very much finding it’s valuable on this project because a lot of these infrastructures aren’t standard. They don’t exist. You might have a partner that’s able to work with you on something, and then they can’t, etcetera.”

— Program leader

consultation has been provided by several sources: Community Care of North Carolina staff; UNC partners; pharmacists who are employed by Community Care of North Carolina and work within each region of the network (that is, staff of the network working in one of 14 regions); or by other well-established pharmacists involved in CPESN

and provided a high proportion of patients with CIPAs. UNC is in charge of continuously collecting data from pharmacies that will inform ongoing program improvements and support pharmacies in making the necessary changes to their workflows.

3. How does the awardee make decisions about program-related changes?

Community Care of North Carolina sees the development of the CPESN as an iterative process in which changes are made in response to “conditions on the ground.” Perhaps the best example of Community Care of North

Carolina’s ability to adapt is how the awardee has treated the term CIPA. Community Care of North Carolina first called the enhanced services a comprehensive medication review (CMR), but learned that this term means something different to different people. For instance, many pharmacists consider

“... we find young pharmacists wanting to do this, you know, and I feel that the future of pharmacy is headed this way rather than just the filling of the prescriptions and giving medications out like [other pharmacies that do not focus on the clinical and coordination of care activities].”

— Participating pharmacist

augmented dispensing services, a low-intensity service, to be equal to a CMR, which is not what the awardee wanted to convey. In receiving feedback from participating pharmacies and reviewing levels of engagement among pharmacists, Community Care of North Carolina realized that it needed to adapt the term to better capture what it expects pharmacists to provide to patients.

4. To what extent has the awardee begun to plan for or implement payment reforms?

As described in Figure 2, Community Care of North Carolina currently has a PMPM (or Phase I) payment model that they will be gradually shifting to a value-based model. Although the awardee is using funds from the HCIA R2 award to reimburse pharmacies, its goal is to have private payers handle the reimbursement for these services. There are three levels of services provided by pharmacies that are reimbursable under the cooperative agreement (see Section A). Figure 2 provides more detail about how the level of service intensity aligns with the awardee’s current payment model.

Figure 2. Payment model description through December 31, 2015

- **Augmented dispensing: < 90-second activity**
Nature of service: Drug-level service meant to go above and beyond typical counseling when opportunities for closing a care gap or enhanced patient communication or follow-up presents itself. Should be minimally disruptive to workflow.
Payment: \$0.58 per attributed life per month
- **DTP follow-up: < 10-minute activity**
Nature of service: Patient-level service meant to resolve drug therapy problems over time and provide sufficient longitudinal follow-up and reinforcement of changes to care plan.
Payment: \$0.00–\$3.80 per member per month (depending on performance results); expected average = \$3.05
- **CIPA: > 30-minute activity (often 1–3 hours)**
Nature of service: Intensive, collaborative, multi-credential, multi-setting patient-level service meant to determine or re-determine an optimal care plan in coordination with other care team members for implementation with follow-up where drug therapy problems were identified or drug therapies changed.
Payment: \$91.00 per CIPA completed

As of January 1, 2016, Community Care of North Carolina plans to move into Phase II of the payment model, which runs through August 31, 2016. This phase will partially provide payment for value-based performance. It was developed based on historical data collected through the 14 Community Care of North Carolina networks, cost data associated with working with NC State Medicaid patients, and the literature on PMPM payments. The pharmacies will be scored on a 10-point scale according to key performance metrics such as total cost of care, hospitalization rate, emergency department visit rate, and adherence to a medication. The pharmacies will then be paid different rates depending on their overall performance level. The awardee anticipates that about 10 to 15 percent of the payments during this shift will be value based, while the remaining will continue to be PMPM. Starting on September 1, 2016, Community Care of North Carolina plans to shift the payment model further so that 50 percent of the payments are value based and encounter-based payments are eliminated, leaving only performance-based and risk-based PMPM payments.

The payment model has been a welcome change for pharmacies, generating a lot of excitement over the potential for their new, active role in improving patients' care. The pharmacists we interviewed know many of the patients who are targeted by the program on a first-name basis. They are enthusiastic about having more time to meet with patients, make sure they understand all their prescriptions, how to take them, and the potential complications. They are also excited about being paid for the time they spend counseling patients or following up with providers.

D. Impact evaluability assessment

After reviewing program documents and having interviewed program staff, we have concluded that a rigorous impact analysis is feasible. The best approach is a difference-in-differences design in which patients attributed to Community Care of North Carolina pharmacies (the treatment group) are matched to patients attributed to comparison pharmacies in North Carolina. This group would consist of nonparticipating pharmacies in similar geographic areas as Community Care of North Carolina pharmacies. Treatment and comparison group patients will include Medicare Part D beneficiaries, Medicaid-CHIP beneficiaries, and dually eligible beneficiaries, as data availability permits.

Because of possible differences in capabilities and in the characteristics of participating and nonparticipating pharmacies, it is possible that there will be some bias that is not fully addressed by the study design. As mentioned, Community Care of North Carolina pharmacies are mostly independent entities in which pharmacists have more professional autonomy with respect to altering their workflows and implementing clinical activities than do nonparticipating pharmacies.

E. Next steps

We look forward to continuing to work with Community Care of North Carolina for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact evaluation include identifying Medicare Part D, Medicaid-CHIP, and dually eligible patients attributed to CPESN pharmacies. After identifying treatment group patients in the Medicare and Medicaid fee-for-service claims data, we will begin to produce initial baseline means, at the pharmacy level, of the characteristics of patients in the treatment group. We also need to purchase the dataQ database from the National Council for Prescription Drug Programs in order to identify retail pharmacies in North Carolina. The database contains many pharmacy descriptors, including geographic identifiers, which we will use to identify potential comparison pharmacies. We expect to use propensity score analysis to better align the characteristics of CPESN pharmacies (including relevant patient characteristics)

with the characteristics of comparison group pharmacies. After constructing a matched comparison group, we will create our outcome and explanatory variables and produce initial impact estimates for the relevant quarters of program operations.

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APPENDIX B.9

CATHOLIC HEALTH INITIATIVES IOWA CORP.,
DBA MERCY MEDICAL CENTER-DES MOINES

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REPORT

APPENDIX B.9

HCIA Round Two Evaluation: Catholic Health Initiatives Iowa Corp., dba Mercy Medical Center– Des Moines

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 8, 2015)

Successes

- Physician and hospital leadership buy-in was critical to effective integration of the health coaches and catalyzed a culture of Lean process improvement at some of the clinical sites.
- Regular meetings and communication channels (in person and by phone) for health coaches and physician champions provided opportunities for continuous support and facilitated shared learning within and across clinical sites.

Challenges

- Understanding the role of the health coach and integrating health coaches into the clinic workflow was initially difficult for some providers and other clinic staff.
- Challenges with implementing health information technology (HIT) forced health coaches and assistants to mine data manually, which was time intensive; delays and accuracy issues with HIT-supported data aggregation impeded self-monitoring and prevented frontline staff from seeing their performance.

Strategies to address challenges

- Evidence showing the effects of the program (such as anecdotes and preliminary data) enhanced buy-in and helped providers understand the role of health coaches and use them more effectively.
- A new health IT system was implemented to support data aggregation and program self-monitoring.

Lessons learned

- Communication among program staff, clinic staff, and regional leadership (both one-on-one and as a group) was identified as essential to successful implementation of the program.
- Implementation of the program demonstrated the substantial need for chronic disease management in the communities and helped providers realize and accept that there are gaps in the usual care management model.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our virtual site visit on October 8, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for

specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Transitioning a Rural Health Network to Value-Based Care, which is being implemented by the Catholic Health Initiatives Iowa Corp., doing business as Mercy Medical Center–Des Moines. In this document (referred to as a “narrative”), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the Catholic Health Initiatives' program, Transitioning a Rural Health Network to Value-Based Care, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent virtual site visit to Catholic Health Initiatives, and a review of the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Catholic Health Initiatives' program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of Catholic Health Initiatives' impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

Catholic Health Initiatives' program, Transitioning a Rural Health Network to Value-Based Care, provides care management for adults with one or more chronic diseases, including diabetes, hypertension, chronic obstructive pulmonary disease, and cardiovascular disease. The program's primary components are care management and facilitated consultation. Care management, provided by health coaches and their assistants at clinics affiliated with participating critical access hospitals (CAHs), includes educating participants about their diseases, providing self-management training, identifying gaps in care, and coordinating care. The program's facilitated consultation component focuses on developing expanded partnerships between the clinical sites and various community resources to better connect participants to support services in their rural communities.

The program involves multiple levels of organizations and staff. At the top level is the HCIA R2 awardee, Catholic Health Initiatives. A division of Catholic Health Initiatives, Mercy Accountable Care Organization (Mercy ACO) partnered with the rural hospitals affiliated with Mercy Health Network to use HCIA R2 funding to implement the program. (Mercy ACO is headquartered in Des Moines, Iowa.) The program leaders and their support staff are based at Mercy Medical Center–Des Moines. Additional staff hired to implement the award across large geographic areas (rural market managers, rural medical directors, and performance excellence facilitators) are located within each of the three regions (North, Central, and Siouland). At the next level down are the 25 participating CAHs located throughout Iowa. Each CAH has one or more affiliated local medical clinics; the clinics are the next level down. Each clinic in turn already has existing clinical and support staff. One physician per clinics associated with a single CAH has been designated the "physician champion" for the HCIA R2 project; his or her role is to support implementation of the program at the local affiliated clinic. Among the physician champions, two rural medical directors have been appointed at the regional level to act as an extension of Catholic Health Initiatives' leadership over the other physician champions. In addition, the program has added new staff called health coaches and health coach assistants to each clinic. These new staff are employed by the CAH-affiliated clinics; however, Catholic Health Initiatives is using HCIA R2 funds to reimburse the CAH-affiliated clinics for a large proportion of their salaries and expenses. In the first year of the cooperative agreement, the awardee reimbursed participating CAHs for 80 percent of their health coaches' wages, benefits, and mileage. The reimbursement level will decrease in the next two years of the award to encourage the hospitals to sustain the health coach position independently.

TAVHealth Information Technology, software for managing customer resources, was rolled out to all participating clinical sites to support program activities. Specifically, health coaches and their assistants use TAVHealth to collect non-clinical but clinically relevant data on participants, to monitor participants and providers, and to integrate community resources with the needs of participants. Other health information technologies, including McKesson and InnovAccer, are also being used to create and manage patient disease registries and to collect data for measuring program outcomes.

The program includes a secondary component focused on quality improvement. Through its hospitals and affiliated clinics, Catholic Health Initiatives employs “performance excellence facilitators” who follow the Lean process improvement approach to identify areas in which operations can be improved and costs can be lowered. The performance excellence facilitators also help to standardize care processes across the network, keeping the focus on customer service.

The awardee hypothesizes that care management, facilitated consultation, health information technology, and process improvement initiatives will increase primary care utilization, promote higher vaccination and screening rates, reduce emergency department (ED) utilization, enhance links to community resources, improve participant and provider satisfaction, and improve operational efficiency. These outputs will, in turn, lead to the outcomes of improved health, appropriate health care utilization, and reduced costs.

The main goals of Transitioning a Rural Health Network to Value-Based Care are to reduce the cost of care, change health care utilization, and improve health by March 2017. Specifically, the program is intended to reduce the total cost of care by 2.08 percent for participants covered by Medicare, by 1.92 percent for participants who are dual eligibles, and by 1.49 percent for all other participants. Second, the program aims to increase primary care utilization by 30 percent, reduce ED utilization for non-emergency visits by 30 percent, and reduce preventable hospitalizations by 12 percent. Finally, the program aims to improve population health as measured by CMS’s 33 ACO quality measures. Other key characteristics of the awardee are described in Table 1.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee’s application, (2) self-reports submitted by the awardee to the implementation and monitoring contractor covering the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee on May 18, 2015, and in our virtual site visit from September 29 through October 8, 2015. For the document review, we used a standardized tool to abstract key data from the awardee’s application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials submitted to the implementation and monitoring contractor through August 31, 2015.

Table 1. Catholic Health Initiatives: Transitioning a Rural Health Network to Value-Based Care characteristics at a glance

Program characteristics	Description
Purpose	Transitioning a Rural Health Network to Value-Based Care provides care management and navigation support for adults living with at least one chronic disease, links clinical and community services, and uses Lean process improvement at participating clinical sites to improve operations and reduce cost.
Components	<ul style="list-style-type: none"> • Care management (primary): Health coaches educate patients about their disease, provide self-management training, perform gap assessments, coordinate care, and connect patients to community services. • Facilitated consultation (primary): Assess and expand community partnerships. • Quality improvement (secondary): Use Lean process tools to identify areas in which to improve operations and lower cost; standardize care processes across network to focus on customer service. • Health information technology (secondary): Use software platforms to manage disease registries, monitor participants and providers, and integrate community resources with participants' needs.
Target population	Rural residents, primarily those with one or more chronic conditions—initially focusing on people with diabetes, hypertension, chronic obstructive pulmonary disease, and cardiovascular disease
Theory of change/theory of action	The awardee hypothesizes that care management, facilitated consultation, health information technology, and process improvement initiatives will increase primary care utilization, promote higher vaccination and screening rates, reduce ED utilization, enhance links to community resources, improve participant and provider satisfaction, and improve operational efficiency. These outputs will, in turn, lead to the outcomes of improved health, appropriate health care utilization, and reduced costs.
Payment model	Shared savings
Award amount	\$10,170,496
Launch date ^a	09/01/2014
Setting	Critical access hospitals and affiliated clinics
Market area	Rural
Market location	Iowa, Nebraska
Core outcomes	<ul style="list-style-type: none"> • Health outcomes: Improved population health as measured by CMS's 33 ACO quality measures. • Health care utilization: Increased primary care utilization by 30 percent, reduced ED utilization for non-emergency visits by 30 percent, and reduced preventable hospitalizations by 12 percent. • Costs: Reduced total cost of care by 2.08 percent for participants covered by Medicare, by 1.92 percent for participants who are dual eligibles, and by 1.49 percent for all other participants.

^aAfter a planning period, the awardee's program became operational as of this date.

Given the large number of participating hospitals and clinic sites (98), the geographic expanse of the project (37 rural counties in two states), and the multiplicity of program staff (38 health coaches, 24 physician champions, 3 rural market managers, and 4 Lean process improvement facilitators), we decided to conduct virtual site visits via phone interviews with project leaders and program staff. We interviewed program leaders based at Mercy Medical

Center–Des Moines, including the principal investigator, grant coordinator, business operations manager, and senior project manager. We then interviewed key program and clinical staff at the regional sites—including health coaches, health coach assistants, physician champions, and clinic administrators. We also interviewed regional leaders, including rural market managers, rural medical directors, and performance excellence facilitators. We used two dimensions in selecting sites: (1) geographic region and (2) extent of intervention implementation. We chose these dimensions in order to detect potential program variation across the three targeted regions (North Iowa, Central Iowa, and Siouxland) and to evaluate sites with varying levels of intervention implementation. The level of intervention implementation was determined using a progression score provided by awardee leaders. The score was calculated after ranking several categories including health coach activities, administrative commitment, data connectivity, execution of performance excellence activities, and status of physician champion selection. In addition to awardee leaders and staff based at Mercy Medical Center–Des Moines, we interviewed staff from the sites shown in Table 2 and the associated clinics in the three regions.

Table 2. Dimensions for selecting sites

Implementation status	Location		
	North Iowa	Central Iowa	Siouxland
High	Mitchell County Regional Health Center (Affiliated clinics: Osage Medical, Riceville Medical, St. Ansgar Medical, Stacyville Medical)	Knoxville Community Hospital (Affiliated clinics: Knoxville, Melcher, Pleasantville)	Baum Harmon Mercy (Affiliated clinics: Hartley Mercy Medical, Paullina Mercy Medical, Primghar Mercy Medical, Sutherland Mercy Medical)
Low or moderate	Palo Alto County Health System (Affiliated clinics: Emmetsburg, Graettinger, West Bend)	Van Deist Medical Center (Affiliated clinics: Hamilton County Jewell, Hamilton County Stratford, Van Diest Main)	Pender Community Hospital (Affiliated clinics: Bancroft Mercy Medical, Beemer Mercy Medical, Emerson Mercy Medical, Pender Mercy Medical)

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed them. A team member received training; achieved interrater reliability on coding; and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this report on Catholic Health Initiatives' implementation experience.

C. Findings

1. How effectively has the program been implemented?

The program has mainly been implemented as originally designed; however, some modifications have been made to the roles and responsibilities of regional leaders and frontline staff. These modifications were made in large part to respond to the realities of implementing a program across a vast geographic area. First, to alleviate the difficulty of having a single

program leader based in Des Moines providing oversight and support to all sites, the program transitioned two physician champions to the role of regional medical directors. The medical directors were to function as extensions of the chief accountable care officer. They were responsible for engaging local physicians and helping them understand the overall program and the roles of the physicians and health coaches. Second, so that health coaches could have daily support, the program changed the management structure so that health coaches reported to clinic managers instead of rural market managers, who are not present at the clinic on a daily basis. Third, health coaches, instead of rural market managers, have taken on the responsibility of identifying community resources and linking patients to them. Health coaches are more familiar with local resources in the rural communities and thus better positioned to identify resources and connect patients to them. However, rural market managers continue to assess community needs at a regional level. Fourth, a new staff position, the rural post-acute coordinator, was created to enhance program engagement with post-acute care facilities such as nursing homes, long-term care hospitals, and skilled nursing facilities. This coordinator is working to develop procedures and train post-acute care facility staff to manage conditions that can be treated in the facility without sending patients to the emergency department.

In addition to the modifications described above, the program made changes to its health information technology infrastructure. Because of delays and problems with the McKesson system (described below), Catholic Health Initiatives contracted with InnovAccer, a data analytics start-up, to aggregate data from all sites into a data warehouse and then transfer the data into McKesson. Currently, McKesson is still being used for its risk manager product, but InnovAccer has taken over the data extraction and aggregation processes.

Reports submitted by the awardee to the implementation and monitoring contractor through August 31, 2015, indicate that the program has exceeded (136 percent) the targeted number of direct program participants (patients served by health coaches) in year one (Figure 1). Indirect program participants include all patients served at partner clinics and hospitals (including patients served by health coaches; these patients are also counted as direct program participants). Due to problems with the program's health information technology, the awardee was only able to report enrollment data on indirect program participants for fewer than half of the partner hospitals. The missing indirect participant data and lack of an indirect participant projection for year one makes it difficult to assess the awardee's indirect participant enrollment progress, and therefore indirect participant data were not included in Figure 1. Nevertheless, the awardee expects the number of indirect program participants to be on target with cumulative (three year) projections once full data are available.

In contrast to the direct participant enrollment projection data included in awardee-submitted reports, a few interview respondents reported that health coaches had not yet reached the target number of patients for care management services. Many interview respondents also indicated that integrating the health coaches into the clinic workflow had taken longer than expected. These comments by respondents may be due to our including sites with low to moderate implementation. Those clinics with greater success in implementation or in following the original timeline in rolling out the care management component may have had more experience

with care management because they were already part of the Mercy ACO or had had prior experience with health coaches. Clinics with slower implementation, on the other hand, may have faced competing priorities that took away from the health coaches' time (for example, they were in the process of converting from paper to electronic medical records [EMRs]) or because they had been unable to hire a health coach assistant and thus were unable to meet the program's data requirements. Health coaches dealing with such challenges reported mainly focusing on patients at their clinic's primary site, despite original plans to reach patients at all clinics associated with each hospital. As sites hire health coach assistants who are able to perform time-consuming data mining and tracking tasks, health coaches will be able to devote more time to providing care management to more patients and clinics will be able to catch up to their original timelines.

The inability of the McKesson health information technology system to collect and aggregate data (described in more detail below) has also led to delays in collecting self-monitoring data for activities and thus to an inability to generate monthly reports to share with clinic sites. Even sites that have been able to generate self-monitoring data have experienced data accuracy issues as a result of the problems with the health information technology system. The awardee has contracted InnovAccer to resolve the issues. InnovAccer has been able to develop a new data warehouse system in two months.

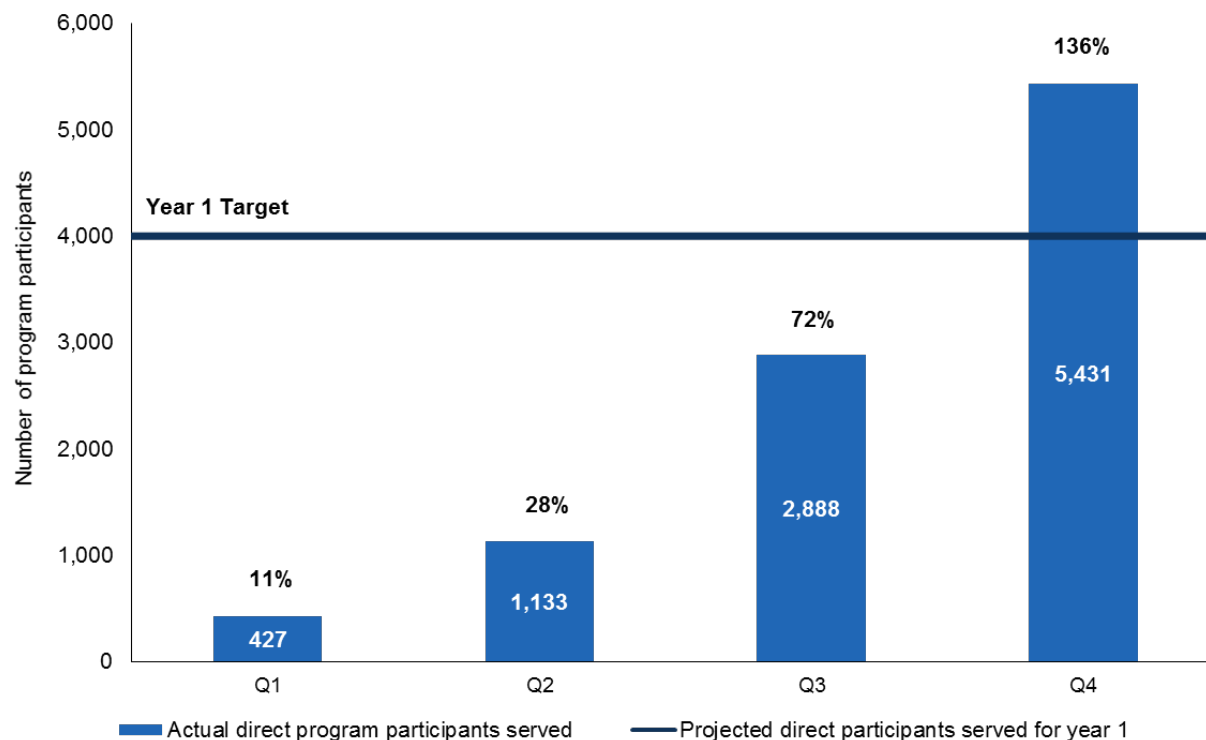
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

a. Primary components: Care management and facilitated consultation

Health coaches and health coach assistants carry out the care management component of the intervention. They use disease registries and patient lists to identify patients with at least one chronic condition. The health coaches then provide patient education through motivational interviewing, self-management training, and goal setting. Prior to each patient's appointment, the health coaches review his or her chart to identify gaps in care. Some of the health coaches are able to conduct health risk assessments for Medicare patients' annual wellness visits; however, in clinics designated as Rural Health Clinics, these assessments must be completed by physicians. The health coaches are also responsible for conducting the facilitated consultation component of the program. This involves identifying community resources and linking patients to them. The community resources to which patients are being linked include local public health agencies, the area agency on aging, transportation services, Meals on Wheels, and smoking cessation programs.

In order to become certified as health coaches, staff must complete a multiday training. The TAVHealth software supports the health coaches' activities by tracking implementation of both the care management component (for example, the number of patients contacted and receiving health coaching) and the facilitated consultation component (for example, referrals to community resources).

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter.

Care management and facilitated consultation are closely linked as they are both implemented by the health coaches. Although we are distinguishing between these two components for evaluation purposes, the program staff consider them part of an integrated program. As a result, the key program facilitators and barriers identified by interview respondents affect both components. The most salient facilitators are summarized below, followed by a discussion of the barriers.

Physician and hospital leadership buy-in is critical to effective integration of the health coaches into clinic workflow. Program leaders reported that the previous success of the Mercy ACO was a factor supporting buy-in by physicians and hospital leaders. Health coaches reported that providers became more supportive of the program once they understood that the health coaches enabled them to more effectively take care of patients and saw firsthand how the health coaches benefitted both patients and themselves. Patients were reported to be more open to care management when physicians and clinic nurses were supportive of the program.

“I think those meetings are wonderful...To just have those positive reinforcements and to know that there are people out there that if I have a question, I can pick up a phone or go to those meetings every month. And you just come out regenerated and excited about the program.”

—Health coach from a
Siouxland clinic

Regular channels for communication are key to program implementation. Having each region’s health coaches and assistants convene monthly reportedly provided them with continuous support and training and facilitated shared learning across regions. Having the physician champions meet monthly helped to strengthen their own buy-in and leadership of the

program. Program staff also appreciated being able to participate in these meetings remotely, as traveling long distances to attend in person is not always possible.

Health coach assistants provide essential support. Prior to hiring health coach assistants, health coaches spent much of their time mining data to identify patients for care management, which limited their time with patients. With health coach assistants in place, health coaches were able to shift this task to the assistants and devote more time to serving patients.

The TAVHealth information technology system enables comprehensive tracking of care management and facilitated consultation. TAVHealth supports health coaches in carrying out and tracking daily tasks performed as part of the intervention and also allows leadership to track implementation progress in real time.

Interview respondents experienced barriers and challenges to implementing the care management and facilitated consultation components of the program as well. The most salient challenges that were identified are described below, along with strategies used to mitigate the challenges.

Understanding the health coach’s role and integrating the role into the workflow was often initially difficult for clinic staff. Clinic staff (and sometimes even the new health coaches themselves) initially found it difficult to differentiate the health coaches’ role from that of clinic nurses. Some health coaches reported feeling that the training they received was insufficient. To address lack of clarity regarding the role of the health coach, rural market managers helped health coaches describe the health coach role more explicitly to clinic staff and demonstrated the ways in which they could care for patients. After working with health coaches, nurses were able to appreciate how their role differed from that of the health coaches. Similarly, physicians were able to see that health coaches supported patient care by providing care management that physicians often were not able to provide during their brief encounters with patients.

Physician resistance to the program hindered health coaches from practicing care management to the fullest extent. Just as physician buy-in was described as a facilitator, lack of physician buy-in was described as a challenge. Physicians were not always receptive to having the ACO leaders, whom they perceived as outsiders, telling them what to do. The level of physician support varied by clinic. Some clinics’ physicians were reluctant to use health coaches; other clinics’ physicians were more supportive of health coaches but they were not fully engaged in the program and so did not know how to utilize the health coaches effectively. To address lack

of buy-in, staff provided evidence of the program’s effectiveness, such as patients’ lowering their hemoglobin A1C or enrolling in a prescription assistance program to afford medications.¹ Health coaches and physician champions generated support for the program by framing the care management component as part of providers’ goals to provide better care for their patients. They also shared preliminary data with the providers (for example, increased Medicare wellness visits, increased mammograms, completed lab tests) to show the effect of care management. Finally, health coaches and regional leaders used anecdotal evidence (for example, “success stories”) to show providers how health coaches could be utilized to make a difference in patient care.

Clinics’ competing priorities interfered with program implementation. When clinics were facing other challenges unrelated to the HCIA R2 program, such as converting from paper-based records to EMRs or handling shortages in staffing, health coaches had less time to focus on their primary role of providing care management. Health coaches at clinics switching to EMRs had to mine data by hand. Because the award supports a large portion but not all of the health coaches’ salaries, health coaches were sometimes asked to assist with tasks not directly related to the program, such as helping the clinic switch to EMRs. Providers in small, rural clinics already felt overextended before the program was implemented and had to make trade-offs between daily responsibilities (such as treating patients) and program-related responsibilities (such as attending physician champion meetings).

Patients in rural communities can be hard to engage due to cultural and socioeconomic barriers. Staff reported that the rural communities they serve are composed of patients with low socioeconomic status who may be uninsured, elderly, or have cultural or linguistic barriers. Their patients have difficulty with transportation to appointments, medication compliance, access of specialty appointments, and accessing healthy food options. Patients in rural communities may approach health care reactively (by only going to the doctor when they are sick) rather than proactively (by accessing preventive services). Many individuals employed in the agriculture industry do not have time during some seasons of the year to leave work for a preventive appointment. Small, rural communities also have fewer resources to which patients can be referred. When there are resources available, patients who are referred to them may still choose not to use them.

Health information technology challenges impeded data collection for awardee self-monitoring and for reporting. Despite initial plans for the McKesson system to aggregate data from each of the sites—including, clinical, billing, and hospital discharge data—McKesson was unable to complete these requirements according to the original timeline. According to project leaders, the different and incompatible EMR systems across the sites

“We produce reports now, but they’re not very accurate. We really can’t do much with them, so I know we’re going through the motions while we’re waiting for them to get accurate. But they’re not as accurate as they need to be [in order] to be useful.”

— Program leader

¹ This anecdotal evidence was provided by interview respondents during our virtual site visit and has not been verified by us.

contributed to this failure. The inability to collect and aggregate data prevented sites from assessing progress (and comparing themselves to other clinics) and created more work for health coaches, who had to mine data manually and track patients using work-arounds such as Excel spreadsheets. Additionally, respondents indicated that reports produced from McKesson were inaccurate. Therefore, health coaches and clinic managers did not feel comfortable sharing these data with providers. Finally, providers expressed frustration not knowing how they were performing on standard ACO and group practice reporting option (GPRO) quality indicators compared to other providers in the other regions and nationally.

b. Secondary component: Quality improvement

The program's secondary component is a quality improvement initiative that follows the Lean process improvements model—the concept of increasing value for customers while using fewer resources. A group of staff called performance excellence facilitators carry out this component by building organizational capacity to sustain a “Lean culture”—that is, a workplace environment at partner hospitals in which frontline staff feel empowered to identify ways to improve their own work processes. Guided by the performance excellence facilitators, performance improvement teams composed of a mix of staff roles within the clinics are working together to standardize operations and streamline processes to promote efficiency (for example, clinic workflow, labs, and screenings). Performance-excellence facilitators work with partner hospitals to conduct “value stream” events (documenting, analyzing, and improving processes); complete quality improvement projects; and conduct strategic planning. Lean process improvement projects are tailored to each hospital or clinic's needs. They can range from decreasing waste in the operating room by eliminating unused equipment to creating processes to reduce medication errors. As part of this component, performance excellence facilitators are also providing consultation to interested clinics to help them achieve recognition from the National Committee for Quality Assurance (NCQA) as a patient-centered medical home (PCMH).

All three regions started with interim performance excellence facilitators to initiate this program component, but now each region has at least one permanent, full-time performance excellence facilitator dedicated to supporting Lean process improvement. However, each region's implementation progress varies. North Iowa, for example, has a more mature quality improvement infrastructure not only because, with eight CAHs, it is geographically larger than the other two regions, but also because it has a bigger team, more resources, and a strong history of leaders who were focused on Lean methods. Siouxland is the smallest region (with only four participating CAHs); the responsibility of the full-time performance excellence facilitator is divided among a number of staff contributing time to the project. Interview respondents indicated that the region has recently had a lot of activity around process improvement. Within regions, there is also notable variation, with some hospitals at the early phases of adopting Lean processes and others carrying out more advanced improvements. As consultants to the hospitals and their affiliated clinics, performance excellence facilitators are able to provide a range of tools to support sites with varying levels of quality improvement experience.

The performance excellence facilitators reported several factors that supported adoption of a Lean culture and quality improvement initiatives, as described below.

Buy-in by hospital and clinic executives catalyzes a culture of Lean at all levels.

Developing a Lean culture takes time, but CEOs and CFOs of partner hospitals who see the value of Lean process improvement can spur adoption of a Lean culture through their engagement and lay the groundwork for hospitals and clinics under their management to focus on quality improvement.

Evidence from successful improvements at other sites motivates staff to initiate quality improvement projects.

Performance excellence facilitators reported that hospital leaders and frontline staff became more responsive to initiating Lean process improvements after they learned of successful projects conducted elsewhere in the region or in other regions. Performance excellence facilitators see value in sharing success stories as a means to encourage staff and build interest in conducting similar quality improvement projects at other clinics and hospitals.

“Every time I’m going out to the hospitals I try to meet with the CEOs one-on-one and have discussions with them on where they want to go and what they want to do... But the best results we’ve found out so far is when they see something else that someone’s done and they want to copy that. They found out that someone else had a great project and things went well. And they realize that they have some opportunities there in the same place. That’s what’s been the biggest bang for the buck.”

— Performance excellence facilitator for Central Iowa

Regular communication is necessary for ongoing quality improvement. Huddle boards (such as posters or bulletin boards) and daily huddles at clinics keep all staff informed about opportunities for improvement. Meetings also provide an opportunity to discuss and develop standards so staff can understand the clinic’s baseline, review metrics, plan key initiatives together, and track improvements over time.

Some challenges to adopting a Lean culture and initiating quality improvement projects, along with strategies to mitigate these challenges (when applicable), were also identified.

It is difficult to find people with a Lean background in rural Iowa. As an approach to quality improvement, the Lean methodology is best implemented when a dedicated person with knowledge of the Lean principles and tools can serve as a leader. In rural Iowa, clinic staff and leaders who are responsible for quality improvement often also have many other responsibilities and priorities, which can hinder progress on Lean activities.

Cultural resistance to value-based payment impedes quality improvement. Performance excellence facilitators and program leaders noted that when providers are paid on a fee-for-service payment model, they focus on targets relevant to that model (for example, how many patients are seen); are less likely to focus on the value of services; and see practice transformation to value-based care as something being imposed on them. As a result, it can be challenging to motivate providers to change existing processes to improve quality. To address

resistance, performance excellence facilitators are attending affinity meetings with the hospitals in the region to spark interest in projects conducted at other area hospitals. Performance excellence facilitators are also meeting with hospital leaders in group and one-on-one settings. By engaging physicians and other staff, the performance excellence facilitators are able to begin the process of changing the culture to support ongoing quality improvement.

Sustaining a Lean culture can be challenging. Because Lean process improvements are most successful when they are implemented in an organization that supports such improvements, turnover in hospital leadership and frontline staff poses a threat to quality improvement activities. When new leaders take over, they may have other priorities or may not see the benefit of investing time and resources in quality improvement. To help sustain a Lean culture, performance excellence facilitators are building momentum on early successes. For example, both performance excellence facilitators reported that after initial trainings with clinic and hospital staff, the facilities executed successful quality improvement projects. Then, the clinic and hospital staff took the initiative to call back the facilitators for assistance with new projects. Performance excellence facilitators recognize that building capacity to support Lean process improvement takes time; however, they have found that once improvement teams conduct a successful process improvement project, they become more motivated to pursue additional process improvements. The performance excellence facilitators described how informal discussions among CEOs of successful Lean events generated excitement and interest from within the clinics and hospitals.

Working as a team can be challenging for some providers. The Lean staffing model is a team-based approach, in which effective teamwork is necessary for successful process improvements. Providers are often used to working alone and performing tasks their own way, so it can be difficult when each team member advocates for a different way to improve a process. For Lean initiatives to be successful, the improvement team must agree upon and work towards implementing one standard process across the whole clinic.

c. What specific implementation changes are anticipated in the coming months?

The first year of the program has focused on building an infrastructure to support successful implementation. No major changes are expected as Catholic Health Initiatives proceeds with its current activities for each program component as described above. For the care management component, the post-acute coordinator, who started on November 1, 2015, will engage post-acute care entities in the community and work with them to develop protocols to handle conditions that can be treated without sending patients to the emergency department. For the quality improvement component, the program will encourage all clinics to rely on the performance excellence facilitators as a resource for changing processes to meet NCQA's requirements for PCMH (leaders at both Mercy ACO and Catholic Health Initiatives view this recognition as an essential part of population health management).

3. How do the awardee and implementing sites make decisions about program-related changes?

The leaders and frontline staff of all HCIA R2 awardees need self-monitoring data in order to gauge their program's implementation and progress and to make decisions on changing either the implementation process or the program itself. Catholic Health Initiatives' system for collecting self-monitoring data uses monthly data reports in the form of run charts that are created at the network, region, clinic, and individual provider level. The data reports are reviewed by the project director and shared with regional leaders, who are then responsible for disseminating performance feedback to individual clinics and providers. The original self-monitoring plan specified that both the McKesson system and the TAVHealth system would be used to generate the monthly data reports. However, due to challenges with implementing the McKesson platform, only TAVHealth is currently being used for self-monitoring. The reports generated by TAVHealth are used to monitor the progress of the health coaches—including, for example, the number of patients contacted and served by health coaches and the number of referrals to ancillary services. Once the McKesson system's reporting functionality is fully implemented, it will integrate data from the clinical and billing systems of all participating CAHs to generate reports on selected quality measures.

In addition to collecting formal self-monitoring data on program implementation and progress, awardee leaders and clinic staff are also relying on informal feedback on the program from both participants and frontline staff. Informal feedback from program participants has indicated that most participants are grateful for the extra layer of care provided by the health coaches. Some participants, however, expressed resistance to frequent contact from the health coaches or uncertainty around the purpose of the health coach. Better understanding of the health coach's role as well as physician support and referral has helped facilitate participant engagement. Several participants have provided anecdotal feedback about the health coaches' positive impact, such as one patient's detection of colon cancer through a colonoscopy that the health coach scheduled.

Informal feedback from frontline staff is given at monthly physician champion meetings, monthly health coach meetings, regular clinic huddles, and one-on-one meetings with clinic managers. According to rural market managers, health coaches have given positive feedback about the protocols developed to standardize care. Health coaches and clinic management both reported that informal feedback provided in regular meetings is incorporated quickly into clinic workflow without needing executive-level approval. Although some physicians expressed concern that health coaches were taking pieces of their job, most have gradually accepted that the health coach was able to provide an extra layer of support for both the patients and the providers.

Early feedback from frontline staff resulted in a number of modifications to program components. Feedback from the clinic staff alerted leaders of the need for health coaches who excelled in patient interactions and for individuals skilled in manipulating and generating data who could assist the health coaches. Additionally, there were initial concerns that the rural market manager would not be able to effectively manage the health coaches given that she lived several hours away. As a result, the management structure was changed so that health coaches

are now reporting to clinic managers. For physician champions, monthly in-person meetings presented a barrier to engagement because of the long travel distances to attend meetings and the limited number of other physicians in the rural clinics to cover for them while they attended the meetings. This feedback led to incorporation of video meetings in place of in-person meetings every other month. Feedback provided to clinic management during huddles has led to changes to clinic protocols, such as protocols for measuring blood pressure or providing care for diabetic patients. Furthermore, although the original plan was for the performance excellence projects to be adapted across all regions, early feedback from performance excellence facilitators about regions' diverse needs convinced program leaders that projects should be developed at the local level and according to local need.

As part of the facilitated consultation component, the health coaches at each clinic started developing informal partnerships with local community organizations that could provide key services for program participants. Engagement with local community organizations also influenced the implementation of the program components. In some regions, previous clinic grants or physical proximity to these organizations (such as being located in the same building) laid the groundwork for such partnerships. In other regions, the health coaches needed to actively reach out to community organizations in order to break down silos and open lines of communication. Frontline staff described these partnerships as mutually beneficial, given that the community organizations' funding was often tied to utilization of their services—and their services, of course, met the needs of program participants. To engage these organizations, clinic staff and rural market managers participate in routine meetings with community partners, such as transitional care teams, inpatient nurse teams, home care, behavioral health, specialty clinics, skilled nursing units, addiction treatment centers, departments of health, and other community coalitions focused on needs such as transportation. However, given the program goals of improving population health and keeping individuals healthy and in their homes, community nursing homes and skilled nursing units have expressed concerns about their facilities' viability. Taking into consideration these concerns and the health coaches' beliefs that a third party should intervene, leaders at Catholic Health Initiatives recently created a full-time post-acute care coordinator position (who was scheduled to begin on November 1, 2015) to manage the post-acute space and engage with post-acute facilities.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

The program expands the shared savings model of the Mercy ACO. Since January 1, 2014, all 25 hospitals participating in the project have been enrolled in the Medicare Shared Savings program with Mercy ACO. Once the minimum savings rate is achieved on attributed patients for calendar year 2015, savings will be shared with all Mercy ACO participating organizations. In the first year of the award, the Mercy ACO reimbursed participating hospitals for 80 percent of their health coaches' wages, benefits, and mileage. The reimbursement level will decrease in the next two years of the award to encourage the hospitals to sustain the health coach position into the future.

There are unique challenges to implementing the payment model in CAH-designated hospitals. The purpose of the CAH designation is to minimize the financial vulnerability of hospitals located in rural communities and to improve access to health care in rural communities. Medicare provides a cost-based reimbursement to CAHs to enable them to provide essential health care, which means that Medicare payments to CAHs are not based on the kind or number of services the CAHs provide but on the cost of the CAHs and the proportion of the costs that are allotted to Medicare patients. One program leader explained the challenge with the CAH financing model as follows: if a CAH provides fewer services than anticipated (for example, if it achieves the program outcome of reduced ED utilization), it may not change the payment the CAH receives from Medicare. Because payments are based on cost, not on the number or type of services rendered, CAHs cannot achieve long-term savings by reducing utilization. Under the CAH financing model, the incentives to motivate cost savings are limited. To address this challenge to implementing the payment reform, the awardee has contracted Seim Johnson, an accounting and consulting firm with expertise in the financing of CAHs, to assist them in understanding CAH payment methodology. The awardee is also working with the University of Iowa to study health care cost flows in the counties served by participating hospitals to better understand the markets in which the payment model is being implemented.

D. Impact evaluability assessment

After reviewing information in program documents and interviews with program staff, we concluded that a rigorous impact analysis is feasible. The best approach is a difference-in-differences design that compares treatment group CAHs in the Mercy Health Network to non-Mercy CAHs. Because CAHs were not chosen randomly to participate in the program, we recommend using all of the Mercy Health Network CAHs to represent the treatment group, including any CAHs not participating in the program. Because most Mercy CAHs are participating in the program, this amounts to adding one facility (Decatur County Hospital, which is similar in size to the other CAHs) to the treatment group. The comparison group would be made up of CAHs in nontreatment counties that are excluded from the program.

E. Next steps

We look forward to continuing to work with Catholic Health Initiatives for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we plan to conduct an in-person site visit consisting of an intensive series of interviews with awardee leaders and program staff in the summer of 2016. We will use these interviews to follow up on key issues identified during the virtual site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the

challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include identifying all Medicare and Medicaid beneficiaries who visit treatment and comparison group CAHs, attributing those beneficiaries to the treatment or comparison groups, comparing baseline characteristics across those two groups, and determining how well the groups match one another. If there are few to no statistically significant differences between the treatment and comparison groups, we will produce initial impact estimates for the first one to two quarters of program operations (depending upon data availability) after creating our outcome and explanatory variables. If there are many statistically significant differences across these two groups, we will conduct a propensity score analysis to match CAHs to one another in order to better align baseline characteristics across the treatment and comparison groups. We will describe our findings in future reports.

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APPENDIX B.10

CHILDREN'S HOME SOCIETY OF FLORIDA

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REPORT

APPENDIX B.10

HCIA Round Two Evaluation: Children's Home Society of Florida

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 1, 2015)

Successes

- Through the HCIA R2 award, the Children's Home Society of Florida expanded its existing pilot program to help patients navigate the health care system. Today, the program, which originally targeted children ages 2 to 6 who had gaps in their primary health care, also coordinates services for the broader Pine Hills community.
- The Evans Wellness Cottage opened in December of 2014, giving Evans Community School students and the greater community of Pine Hills, Florida, easy access to primary, behavioral, and dental health care. Because the cottage is located on the Evans Community School campus across the street from a public bus hub, students and community members have direct access to its wide range of services.

Challenges and strategies to address them

- To align the priorities of the multiple organizations that support the program, True Health, one of the partners, hired an Evans Community School liaison, who has been a key facilitator of effective partnerships between True Health, Orange County Public Schools, and the Children's Home Society. She also uses outreach and education about the program to help boost Evans Community School students' use of the services at the Evans Wellness Cottage.
- Gaining the trust of the Pine Hills community's predominantly low-income community, which has a large population of Haitian immigrants, has been a challenge to the Children's Home Society and True Health staff. In response to the slow uptake of the program's services in this community, staff from both organizations have developed culturally appropriate outreach materials and tactics, including strategically placed billboards and local radio advertisements.

Lessons learned

- The Cottage's success depends on strong partnerships. Each partner must be flexible and committed to both the school and the community.
- Just having an FQHC on a school campus is not enough to ensure that students, families, and community members will use its services. Careful planning and marketing that are specific to the needs of the target population are necessary to ensure use of services.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 1, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded the Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2)

improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Evans Wellness Cottage, which is being implemented by the Children's Home Society of Florida. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the Children's Home Society's program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to the Children's Home Society, and a review of the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the Children's Home Society's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
 3. How does the awardee make decisions about program-related changes?
 4. To what extent has the awardee begun to plan for or implement payment reforms?
-

We also provide a brief summary of the Children's Home Society's impact evaluability assessment and identify the next steps in our evaluation.

A. Introduction

The Children's Home Society, a nonprofit advocacy organization working to protect and support children and families, received HCIA R2 funding to give individuals living in Pine Hills, Florida, better access to health care. The Children's Home Society is using the award to implement a program with two primary components: (1) patient navigation and (2) direct services to individuals living in the community. The awardee's theory of change (TOC)/ theory of action (TOA) is that the program's patient navigation and direct services will lead to lower costs of care, better use of appropriate health care services, and improved outcomes for patients.

The program coordinates and expands on several disparate activities that existed before the HCIA R2 award. At the core of these activities is the community school model, which brings together the school and other community resources to support the entire community in promoting academic achievement; enrichment through sports, arts, and cultural events; and the empowerment to succeed. It helps accomplish this by linking people to the health and social services they need. In the year before the HCIA R2 award, the awardee transformed the Evans High School into the Evans Community School; this transformation involved, among other things, providing on-campus basic health and social services (for example, a school nurse and food pantry) to students and their families. Around the same time, the Children's Home Society secured a grant through the Affordable Care Act to build a school-based federally qualified health center (FQHC) at the Evans Community School. In addition, through a patient navigation pilot program, the awardee worked to identify children ages 2 to 6 in the Pine Hills community who were covered by WellCare, a Medicaid managed care organization, and who had gaps in their use of primary health care. The Children's Home Society's partners in launching the community school are:

- Orange County Public Schools, the school system operating the Evans Community School
- True Health (previously known as the Central Florida Family Health Center), a private, nonprofit, federally qualified health center with several sites in the region that provide services through the primary care medical home (PCMH) model
- The University of Central Florida (UCF) Center for Community Partnerships, a center that links UCF resources with local initiatives to strengthen communities in central Florida

The Children's Home Society received the HCIA R2 award to use this infrastructure and these partnerships to expand the medical services associated with the community school. Specifically, the awardee expanded its patient navigation pilot program and, in addition to

"It's been a desire of all of us to put together something where we can actually bring the variety of pieces together, not just the health care, but the behavioral health, the social services interventions, the educational support, and begin to see as a composite, how are we really affecting the lives of these children? Because in the end, it's the combination of services, health care being a critical piece that will make the difference for these kids in the long run."

—Participating program partner

targeting young children with care gaps, broadened the target population to include the entire Pine Hills Community. The Children's Home Society now offers patient navigation services at two locations: the Evans Community School (in an area of the main building known as the HUB) and the Pine Hills Wellness Office (a mile away from the school). Patient navigators at the HUB see students and community members on campus and connect them to a variety of health and social services. These social services include

housing supports, employment supports, food pantries, child care, and services that connect individuals to health insurance. Patient navigators who work out of the Pine Hills Wellness Office do outreach throughout the community, connecting individuals to the same types of services as the navigators at the HUB. The Children's Home Society rebranded the patient navigation program and it is now referred to as the Pine Hills Wellness Program.

The second program component, direct services, is provided at the HUB and the Evans Wellness Cottage (a freestanding building at the back of the Evans Community School campus that is operated by True Health). At the HUB, the Children's Home Society employees whose positions are funded through HCIA R2 provide behavioral health services to Evans Community School students. At the Evans Wellness Cottage, True Health employees provide primary care, behavioral health, and dental services through a PCMH to Evans Community School teachers, students and their families, and other community members.

In addition to patient navigation and direct services, the Children's Home Society sponsors an optional weekly after-school education program called the Student Ambassadors. Every week, students learn about a different health topic, and throughout the year, they go on several field trips (for example, to a hospital or medical school).

The HCIA R2 funding is one of several funding streams that supports the activities of the Evans Community School and the Cottage; the Children's Home Society is leveraging funding beyond what it receives from HCIA R2 in order to support all of the activities it offers in the Evans Community School. Each of these funding streams is necessary to achieve the awardee's goals, and it is not possible to clearly define the impact of a single funding stream. This means that although HCIA R2 funding is used primary to support the Pine Hills Wellness Program staffs' salaries, the services provided by these staff members lead to patient navigation, training opportunities, and other activities that benefit multiple aspects of the program.

Other key characteristics of the Children's Home Society are described in Table 1.

Table 1. Children's Home Society: Evans Wellness Cottage characteristics at a glance

Program characteristic	Description
Purpose	The Children's Home Society of Florida (CHS) received an HCIA R2 award to implement a multi-pronged program aimed at improving access to health care for individuals living in Pine Hills, Florida.
Components	Patient navigation (primary) and direct services (secondary)
Target population	All residents of zip code 32808
Theory of change/theory of action	CHS hypothesizes that implementing a program that incorporates patient navigation and direct services for the Pine Hills community will lead to lower cost of care, better use of appropriate services, and enhanced patient outcomes.
Payment model	Risk-based capitated payment model, shared savings
Award amount	\$2,078,295
Launch date ^a	10/1/2014 ^b
Setting	Evans Community School
Market area	Urban
Market location	Zip code 32808 in Pine Hills, Florida
Core outcomes	<ul style="list-style-type: none"> • Number of emergency department visits per enrollee • Percentage of Medicaid/CHIP population receiving timely health care • Quality of the patient's experience with care • Percentage of female enrollees < 18 years of age who are pregnant • Percentage of youth enrolled at Evans Community School who report health risk behaviors • Cost of care • Percentage of enrollees with asthma who have one or more visits to an emergency department

^a After a planning period, the awardee's program became operational as of this date.

^b The HCIA R2 program launched in stages. On October 1st, 2014, the patient navigation and patient and family engagement components of the program became operational, followed by the opening of the Evans Wellness Cottage on December 3, 2014.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by the Children's Home Society to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and during our site visit to Pine Hills, Florida, from September 29 through October 1, 2015. For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we spoke with awardee leaders, key implementation staff, frontline workers, and staff of the project's key partners, including True Health, Orange County Public

Schools, and UCF. We visited the primary program sites—the Pine Hills Wellness Office, the HUB at the Evans Wellness Community School, and the Evans Wellness Cottage.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A trained team member achieved interrater reliability on coding and applied codes to identify program components, research questions, and concepts that described the awardee's implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as necessary, the evaluation team created this report on the Children's Home Society's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Although the awardee's program was built on an existing concept and infrastructure, the process of implementing the program was rocky in the beginning. In the first year of implementation, the Children's Home Society and True Health made several important changes to the program in order to better meet the needs of the community and improve use of the program's services.

The Children's Home Society expanded the referral network for the patient navigation services to include more social service agencies. After receiving the award, the Children's

"We didn't think we were going to be in the food pantry and snack cabinet business, but that's kind of where we ended up. And part of the community school model is we don't have a set program that you put in place and you unpack. You go in and you ask a lot of questions to the community and the students and the school administration to find out what the needs are, and then figure out how you're going to address those needs."

—Participating program administrator

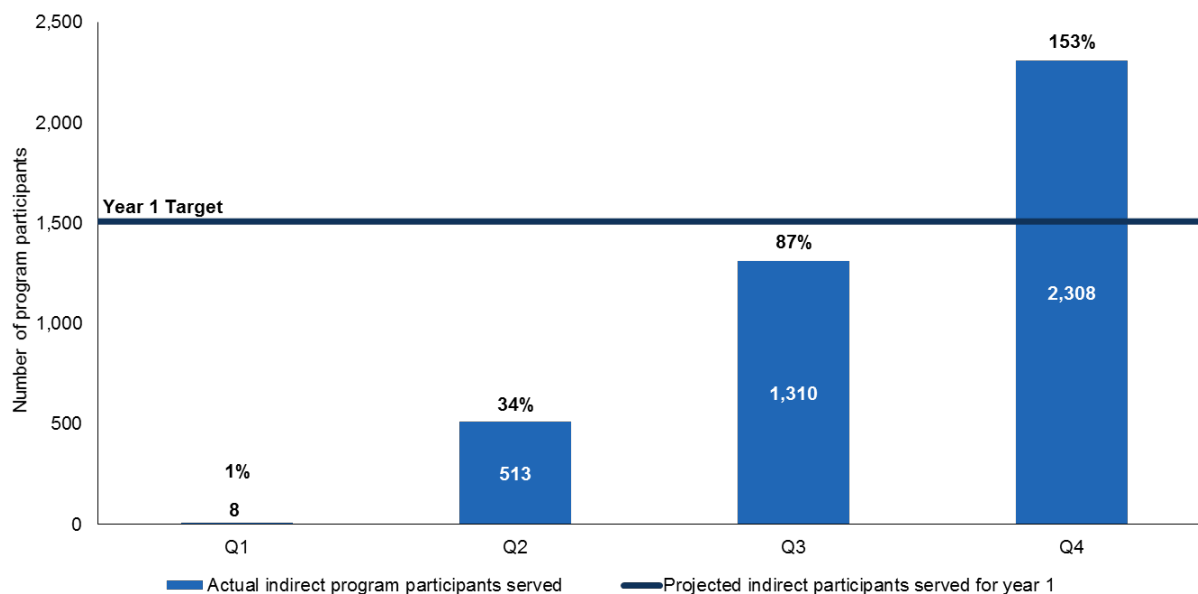
Home Society staff quickly realized that, although many individuals needed health care, social services were in higher demand. In particular, much of the community needed support to obtain housing, employment, and food. To better meet the needs of the community, the program leaders, frontline staff, and the Children's Home Society advisory board strategically reached out to community providers to expand their referral network.

The Children's Home Society had to revamp its recruitment strategy to boost enrollment. Under HCIA R2, the patient navigation component was initially focused on WellCare beneficiaries who were identified as having gaps in standard care (for example, scheduled vaccinations). As the program progressed, the patient navigators decided the target population should go beyond WellCare beneficiaries. The navigators expanded their outreach and began targeting community providers and events to more effectively reach those in need of support. Although the program is reaching the expanded target population more effectively now (see Figure 1), it is unclear how much the patient navigation services are improving access to and use of necessary services. Anecdotal information suggests the navigators have successfully coordinated services for some community members, but the Children's Home Society does not

collect information about outcomes once a patient navigator is in contact with an individual from the community.

True Health made several changes to the program offered at the Evans Wellness Cottage to improve service utilization. The Evans Wellness Cottage opened in December 2014, four months after the planned opening date. Between the program launch on October 1, 2014 and the opening of the Cottage facility in December, True Health provided the services of a physician to students at the HUB, and students used these services often. However, once the services were moved to the Cottage, which is on the edge of campus, the level at which students used the services immediately dropped. In response, True Health decided to keep providing services on the main school campus for an hour every morning, and also hired a school liaison to promote communication with the school and its students. In addition, after consulting with students and teachers, True Health redesigned its appointment scheduling process. Since the liaison position was filled and the scheduling process was revised, more students use the services provided at the Cottage, but community members are still using the Evans Wellness Cottage more often than individuals connected with the school do.

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter. Children's Home Society of Florida does not have direct program participants.

2. What are the facilitators and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

a. Primary component: patient navigation

Patient navigators at both sites consistently mentioned that the awardee's organizational culture is a primary facilitator of implementation. The Children's Home Society leaders have promoted and consistently reinforced a culture of open communication and collaboration—both with and between the frontline staff—which grows out of the constant communication between awardee leaders and the key partners. The awardee consistently seeks formal and informal feedback from the frontline staff and acts on any concerns that are raised. Navigators also reported that the Children's Home Society provided any necessary resources it was asked for.

Patient navigators said that Pine Hills is a closed-off community, and its residents can be distrustful of the organizations that work in the area. Because the community is

"Because [the Pine Hills community] is a lower socioeconomic community you have a lot of people who will come in and say, 'Oh, we want to do this. We want to give you this,' and over time I think the community at large has gotten to a point where [they tell us]: 'We don't know if this is going to benefit us. So we're going to give you a while to show us what you can do before we support it.'"

—Patient navigator

predominantly made up of low-income households and includes a large immigrant population, many organizations receive grants and implement short-term programs in the area, often leaving little behind to show for it when the grant is over. In addition, Pine Hills is an unincorporated community in Orange County, so it has no local oversight or centralized planning. Consequently, many individuals who live in Pine Hills are slow to

trust people and organizations from outside the community, and they were particularly reluctant to trust the patient navigators from the Children's Home Society, because they associate the organization with its foster care services. In response, the awardee rebranded the patient navigation component as the Pine Hills Wellness Program. In addition, the awardee works hard to meet community members where they are, at community events and at anchor institutions such as churches, to establish itself as a community-based organization that is there to support and coordinate services for those in need. The awardee has also developed and marketed a sustainability plan to promote the organization as a dependable mainstay in the community.

Members of the area's Haitian population, who often do not speak English and may have different expectations about the type of care one should receive from a health care provider, pose a particular challenge for patient navigators. The language barrier, besides being an obstacle to communication, can also makes it challenging to refer the patient to an appropriate provider who is able to provide culturally competent care. Recognizing this, the awardee hired navigators from the community that are fluent in Haitian Creole, and places particular emphasis on engaging external partners from diverse cultural backgrounds—including providers of both health and social services.

b. Secondary component: direct services

The physical locations of the direct services at the HUB and the Evans Wellness Cottage are important facilitators to implementing those services. At the HUB, students who need behavioral health care are referred by their teachers to the HUB navigators. The navigators may then refer them to the HUB counselors, whose offices are located next door. Students are more likely to use these services in part as a result of this layout. Furthermore, the navigators and behavioral health providers formed a tight-knit team, creating a supportive working environment. The Evans Wellness Cottage, although slightly less accessible to students than the HUB, is still strategically located to offer easier access to care. The Pine Hills community itself is an area with a shortage of primary care services, and the Cottage is also stationed across the street from a public bus hub, reducing potential transportation barriers for patients who live farther away.

Although many students at the Evans Community School are in need of behavioral health services, the fear of being stigmatized prevents many of them from getting the services they need.

Many students who attend the Evans Community School have experienced trauma and would likely benefit from the counseling services provided at the HUB, but the stigma associated with getting these services prevents many students from seeking the care they need. Patient navigators and counselors are combating this stigma with education. As a result of the staff's continued outreach, both formal and informal, more students are taking advantage of the counseling service.

"I had to work with them, massage them, help them understand what counseling really is, get them to try it, and then they come back ... a year or so later and say, 'It changed my life.' "

—Participating frontline staff

The awardee's partners have conflicting visions of the services that should be provided by the Evans Wellness Cottage.

The conflicts highlight the challenges of integrating a medical model focused on the entire Pine Hills community with an educational model that focuses on the protection and academic achievement of students. Program administrators and frontline staff noted that, because of these conflicts, the visions that different partners, including the Children's Home Society, True Health, and Orange County Public Schools, have for the Cottage periodically clash. For example, True Health expected to build a pharmacy at the Evans Wellness Cottage, as it has done for its other FQHC sites. However, Orange County Public School staff strongly opposed having a pharmacy on campus; they wished to protect the student community from narcotics-related crime. Although these sorts of conflicts were common at the beginning of implementation, the strategy of consistent communication between all of the partners has been essential to ease tensions and work through issues. Through weekly meetings, the team has been

"I think the merging of the two models is the biggest kink ... when there's a vision and the vision might be this nice round, perfect balloon, and when it touches the wall, it pops, and when it pops, Starbursts come out and everybody's happy. But when that vision is now handed down and we are operating in the vision ... all of a sudden the balloon isn't a circle anymore, it's more of a triangle and now it's not dropping Starbursts, it's dropping Lemonheads.

— Participating program administrator

able to identify differences between the partners in these visions and come to a consensus about how to address them.

Communicating information about the Evans Wellness Cottage to the community has proved to be a challenge. Program administrators and frontline staff mentioned that word of mouth is the most common way community members hear about the Cottage, and often inaccurate information is passed along. Consequently, many students and community members came to the Cottage with misconceptions; some believed the services were free of charge or that patients could be seen without an appointment. True Health staff, in partnership with the Children's Home Society, developed new marketing strategies to combat these issues. For example, they simplified the marketing materials that they place in the Evans Community School and work with local radio stations to accurately promote the services of the Cottage. The Evans Community School's liaison has also been an important resource for communicating with students and families about the Cottage and the requirements for being seen.

3. How does the awardee make decisions about program-related changes?

The awardee uses data they collect through various self-monitoring activities to make decisions about program-related changes. The patient navigators track their daily activities with call logs, home visit logs, and records of outreach activities they conduct at community events. The Evans Community School uses a paper system to monitor the number of referrals made to students, parents, and community members; the result of the referrals; and the number of behavioral health care visits. The Children's Home Society specifically seeks feedback from students about the services provided through the Evans Community School and the Evans Wellness Cottage by administering a survey at the end of the school year. The awardee also developed a new electronic monitoring tool, known as Effort to Outcomes (ETO). The goal of the system is to monitor all awardee activities, including those of the patient navigator and Evans Community School, in order to know all the services an individual receives from each component of the program. To date, ETO is being implemented by the patient navigators at the Pine Hills Wellness Office, but is not used by the staff at the Evans Community School. In addition, True Health monitors direct services through its electronic medical records (EMR) system. It is the goal of the Children's Home Society to merge ETO with the EMR data. At this time, the two systems have not been merged, and there is no expectation for when this will happen. Finally, True Health administered a health risk assessment of patients' BMI, physical activity, nutrition, substance abuse, mental health, and sexual activity to help drive program planning.

In addition to formal monitoring systems, program leaders use informal means to seek feedback from participants and frontline staff to inform programmatic changes. For example, the Children's Home Society program administrators consistently have impromptu meetings with patient navigators to better understand challenges in the field or with the organization. In addition, the Evans Community School has received substantial feedback from students about the Evans Wellness Cottage. The Evans High School student leadership council acts as the "eyes

and ears of the campus” for the awardee team. They bring many of the students’ complaints to the Evans Community School leaders.

The self-monitoring data and the feedback from participants and frontline staff can lead to changes to the program in many different ways. First, upon receiving the award, the Children’s Home Society developed a leadership cabinet, which includes representatives from the awardee, Orange County Public Schools, University of Central Florida, and True Health. During weekly meetings, the cabinet discusses any issues that have come up for any partners and addresses the issues accordingly. For example, the student leadership council gave the Children’s Home Society staff feedback that suggested students were having a difficult time getting appointments at the Evans Wellness Cottage. Based on the feedback, the cabinet decided to adjust the appointment times available to students, and now the Cottage provides an hour of walk-in appointments at the beginning of every school day.

Internally, the Children’s Home Society has a quality management department with a separate chain of command than the one used for day-to-day program management. The goal of this separate department is to provide an objective analysis of the different program components and make changes when the data suggest an opportunity to improve efficiency or effectiveness. In one case, the quality management team identified room for improving the efficiency with which the patient navigators of the Pine Hills Wellness Program carried out home visits. Initially, the visit lists were divided up alphabetically between the navigators. Based on the analysis by the quality management team, the operational staff adapted their strategy and planned home visits based on the geographic location of the patients’ homes instead of their names. In addition, operational staff often used the informal feedback provided by frontline staff to make important changes to the program. Feedback from the patient navigators during an impromptu meeting suggested that it was not an effective strategy for navigators to attend large, community events with little time for one-on-one interaction. Since this meeting, the patient navigators are strategically selecting events that provide the opportunity for personal engagement.

4. To what extent has the awardee begun to plan for or implement payment reforms?

The Children’s Home Society has proposed a capitated payment model for the Evans Wellness Cottage, but it confronts several challenges to developing this model. First, Florida has opted not to expand Medicaid, and many of the patients at the Evans Wellness Cottage are uninsured. Should Florida opt to expand Medicaid, many individuals in Pine Hills would be eligible for coverage. However, there still remains a large undocumented Haitian community that would not be eligible for coverage if Florida did choose to expand.

“By looking at the information about how much time we were spending just going through the motions ... we realized that we had to go back to grassroots process, go back to the basics, and start being more personable with individuals, being more selective where we went and how we approached people that we were interacting with.”

—Participating program administrator

Second, data submitted by the Children's Home Society indicate that no health insurance company dominates the market in Pine Hills, with Medicaid, the Children's Health Insurance Program, Medicare, and private health insurance all covering some patients, while others are uninsured. Currently, the awardee is working with WellCare—one of eight Medicaid managed care companies serving the area—to develop a capitated rate for those beneficiaries covered under WellCare, but many of the details have not been worked out. The awardee plans to work with additional Medicaid managed care organizations, but there is no timeline for these negotiations.

Finally, True Health has not been included in the discussion with WellCare to develop the new payment model. The Children's Home Society anticipates that it will be able to eventually incorporate shared savings into the capitated payment model, but work has not yet begun, nor are details available on any plans for this.

D. Impact evaluability assessment

After reviewing the information in program documents, conducting interviews on an October site visit, and corresponding via email with staff at the Children's Home Society and UCF, we have concluded that our ability to conduct a rigorous impact analysis hinges on the availability of timely Medicaid data. We are exploring the possibility of obtaining the data directly from one or more Medicaid managed care organizations that operate in the Pine Hills market area. If we are unable to obtain Medicaid managed care data, we will use data from the awardee to describe trends in the demographics of program participants and in the use of health care services at Evans Wellness Cottage. Alpha-MAX data do not appear to be an option for this awardee because these data for Florida lag significantly, and there have been quality issues with recent Florida MAX encounter data¹

E. Next steps

We look forward to working with the Children's Home Society for the rest of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and

¹ See http://www.mathematica-mpr.com/~media/publications/pdfs/health/max_ib22.pdf.

facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

We cannot move forward with an impact evaluation unless we can identify a usable data source. If we are unable to conduct an impact evaluation, we will provide summary statistics from the data that the Children's Home Society has submitted to Mathematica. Because these data only describe use of the health care services at the Evans Wellness Cottage, we will not be able to calculate data for any of the core outcome measures. To produce summary statistics, we will need to clean the data; this includes categorizing the Children's Home Society enrollees by insurance status and payer and identifying awardee "enrollees" who received services after the HCIA R2 award date (because the data include observations from before the award date).

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APPENDIX B.11

CLIFFORD W. BEERS GUIDANCE CLINIC, INC.

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REPORT

APPENDIX B.11

HCIA Round Two Evaluation: Clifford W. Beers Guidance Clinic, Inc.

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–September 15, 2015)

Successes

- From the executive team at Clifford W. Beers Guidance Clinic, Inc. to the Wraparound New Haven care coordinators who work directly with children and families, staff at all levels are engaged and share a commitment to the program's success.
- Care coordinators give high marks to the extensive training they receive on the wraparound model.
- Care coordinators reported that families are engaged in the program and improving their ability to manage behavioral, social, and medical needs.

Challenges and strategies to address them

- Enrollment numbers continue to lag behind program expectations. Clifford Beers Guidance Clinic worked to address this by expanding Wraparound New Haven's eligibility criteria, investing in key health care system personnel to facilitate referrals, and strengthening relationships with referral partners.
- Clifford Beers Guidance Clinic experienced significant challenges integrating physical and behavioral health due to its limited physical health experience and because of physical health providers' competing priorities and limited resources. Clifford Beers Guidance Clinic hired a pediatrician who is helping to strengthen care coordinators' knowledge about physical health and facilitate relationships with physical health providers.

Lessons learned

- Clifford Beers Guidance Clinic found that integrating physical and behavioral health requires careful planning and an understanding of both provider settings.
- Maintaining a flexible approach while implementing Wraparound New Haven allowed program staff to address implementation challenges as they emerged.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on September 15, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39

awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is Wraparound New Haven, which is being implemented by the Clifford Beers Guidance Clinic. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Clifford Beers Guidance Clinic's Wraparound New Haven program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, and key informant interviews conducted during a recent site visit. We also reviewed reports submitted by Clifford Beers Guidance Clinic to the implementation and monitoring contractor covering the period through August 31, 2015.

In addition to providing a general description of Wraparound New Haven's program, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of Clifford Beers Guidance Clinic’s impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

Clifford Beers Guidance Clinic, a community-based mental health clinic, received an HCIA R2 cooperative agreement to implement Wraparound New Haven. Through this program, the awardee aims to improve the management, coordination, and integration of behavioral and physical health services and social supports for high-need children and their families. Wraparound New Haven follows the wraparound care planning model, which emphasizes family-driven care that is community based and well-coordinated. Clifford Beers Guidance Clinic views Wraparound New Haven’s three primary program components—care management services, integrated behavioral and physical care services, and patient and family engagement—as being interrelated and vital to the success of the program. Families enrolled in Wraparound New Haven are connected with a care coordinator who works with them on these dimensions. Clifford Beers Guidance Clinic hypothesizes that families working closely with a care coordinator will have a better understanding of how to manage their own health, determine the services they need, and find those services. This understanding will, in turn, result in improved mental and physical health outcomes as well as lower costs. Other key characteristics of the program are noted in Table 1.

B. Methods

The evaluation team developed this narrative based on analyses of (1) the awardee’s application, (2) self-reports submitted by Clifford Beers Guidance Clinic to the implementation and monitoring contractor that cover the first year of the award (September 2014 to August 2015), and (3) qualitative data gathered during initial telephone discussions with the awardee and our site visit to the Wraparound New Haven program September 14 and 15, 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

Table 1. Clifford Beers Guidance Clinic: Wraparound New Haven characteristics at a glance

Program characteristic	Description
Purpose	Wraparound New Haven connects eligible high-need children and their families to care coordinators to improve the management, coordination, and integration of behavioral and physical health services and social supports.
Components	<ul style="list-style-type: none"> • Care management services (primary) • Integrated behavioral and physical care services (primary) • Patient and family engagement (primary) • Health information technology (health IT) (secondary)
Target population	<p>Wraparound New Haven provides services to an "index child" (a primary participant who meets the eligibility criteria) and to all members of the child's family who are interested in participating. The index child must:</p> <ul style="list-style-type: none"> • Be a resident of Greater New Haven • Be no older than 17 • Be a current Medicaid beneficiary • Have at least one chronic medical diagnosis (broadly defined as any condition that consistently impacts a child's health status) and one mental health diagnosis or be living with, or under, conditions that tend to predict mental health issues • Have had either two or more visits to the emergency department (ED) or one medical, surgical, or psychiatric hospitalization during the prior 12 months
Theory of change/theory of action	The awardee hypothesizes that families working closely with a care coordinator will have a better understanding of how to manage their own health, determine the services they need, and find those services. This understanding will, in turn, result in improved mental and physical health outcomes as well as lower costs.
Payment model	<p>Value-based purchasing, direct payment from community providers</p> <p>The awardee is in the early stages of developing its payment model, which may include a value-based purchasing arrangement with Medicaid or marketing its care coordination services directly to community providers and hospitals.</p>
Award amount	\$9,739,427
Launch date ^a	12/2/2014
Setting	<ul style="list-style-type: none"> • Community based • Home based
Market area	<ul style="list-style-type: none"> • Urban
Market location	<ul style="list-style-type: none"> • New Haven, CT
Core outcomes	<ul style="list-style-type: none"> • Improve the coordination of medical and behavioral health care throughout multiple care settings • Increase patient and family engagement • Improve participants' physical and mental health status • Increase participants' social connections and social supports • Reduce fragmentation in services and the cost of care

^aAfter a planning period, the awardee's program became operational as of this date.

The purpose of the site visit was to collect detailed information about staff and stakeholders' experience and progress in implementing the Wraparound New Haven program, changes to the program, facilitators of and challenges and barriers to implementation, and updates to the payment model. During our visit, we interviewed program leaders; program care coordinators; and staff at partner sites engaged in the project, including Fair Haven Community Health Center and Yale New Haven Children's Hospital.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we made audio recordings of all interviews and transcribed them. A team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this report on the awardee's implementation experience.

C. Findings

1. How effectively has the program been implemented?

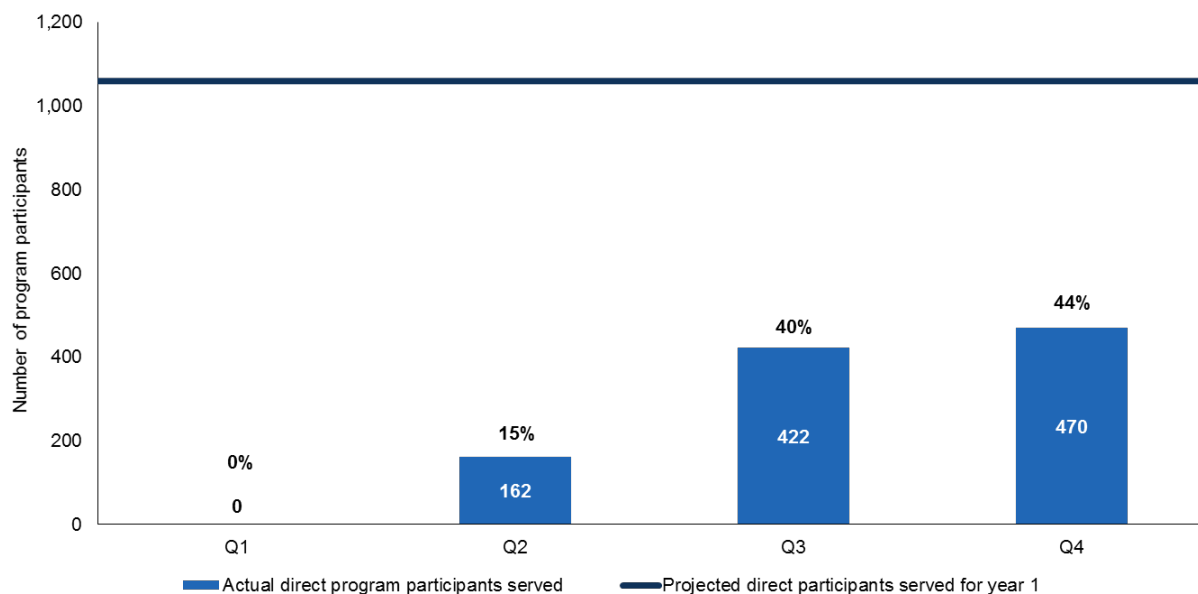
Clifford Beers Guidance Clinic made significant progress implementing several components of Wraparound New Haven during the first program year, but faced challenges with others. The awardee experienced success engaging youth and families in their care and developing and implementing care plans. In contrast, program staff faced barriers recruiting program participants and integrating physical and behavioral health services.

Strong team commitment to and buy-in of the wraparound model facilitated overall program implementation. All members of Wraparound New Haven—from care coordinators to executive leaders at Clifford Beers Guidance Clinic—receive training on the wraparound model, believe strongly in its benefits, and are committed to the program's success. In addition, open lines of communication and the awardee's open-office floor plan facilitate knowledge sharing and strong relationships among staff. Moreover, Clifford Beers Guidance Clinic leaders are flexible and open to adapting the program to better meet the needs of participants (for example, by adjusting the staffing model to address participants' clinical needs).

Despite efforts to adjust the recruitment strategy, the awardee did not meet its enrollment goal in the first program year (Figure 1). Clifford Beers Guidance Clinic leaders said its programs are normally oversubscribed and they were initially surprised by Wraparound New Haven's recruitment challenges. However, although they have extensive experience providing behavioral health services, Wraparound New Haven is their first foray into physical health. This lack of experience with physical health may have contributed to two recruitment challenges: limited referrals from physical health providers and stringent physical health eligibility criteria.

To address these issues, the awardee met frequently with leaders at existing referral partners, most notably a community health center and Yale New Haven Hospital System. Clifford Beers Guidance Clinic also gave a stipend to the community health center and embedded a nurse at Yale to support program referrals. In addition, Clifford Beers Guidance Clinic staff reached out to new potential referral partners, including school-based health centers, federally qualified health centers (FQHCs), and private physicians. Moreover, Wraparound New Haven expanded eligibility criteria to include youth with two ED visits (instead of three ED visits or a hospital admission) and youth in surrounding cities (instead of only New Haven proper). Despite these expansions, several staff at Clifford Beers Guidance Clinic and referral providers share the concern that they will be unable to identify enough index children who meet the eligibility criteria to reach recruitment goals.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014–August 2015.

Note: Clifford Beers Guidance Clinic counts index children and their enrolled family members as direct participants. Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. The awardee does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

a. Primary component: care management services

Care coordinators help families identify and access services to address their physical and behavioral health and social service needs (such as housing or employment). To support their work, Wraparound New Haven clinicians complete a series of assessments to identify families' needs and strengths. Drawing on these results, care coordinators work with families to develop and implement a care plan to address their medical, behavioral, and social goals. When needed, care coordinators also provide referrals to clinical and community-based services and supports and, with permission of the family, share the care plan with relevant providers. As of September 2015, each care coordinator worked with about 10 families.

"I think [the benefit of Wraparound New Haven] is our ability to do some groundwork...there are so many different programs out there, or support groups, or connections that can be made that families don't know about. Now [the families] have that "go-to" person . . . when they don't know what to do, they know they can call and say, 'Hey, I am really stuck.'"

—Care coordinator

Clifford Beers Guidance Clinic's extensive training program for care coordinators facilitated care plan development. The awardee drew on its decade-long experience implementing wraparound programs for children with behavioral health needs to develop training for Wraparound New Haven.¹ All Wraparound New Haven team members receive 100 hours of training on the wraparound model of care and common chronic conditions before they work with families. Care coordinators said the training was very valuable and expressed confidence in their ability to work with families, despite varying levels of previous experience. (Clinical staff found wraparound training less useful to their work because they are less involved in the care coordination component.)

In addition, some care coordinators appreciated the program's supportive supervision model. Care coordinators review each family's care plan with a lead care coordinator, supervising psychiatrist, and pediatrician. Care coordinators also regularly meet with these staff members to discuss cases and work through challenges.

Care coordinators view assessments as important for care plan development, but indicated the volume could be daunting. Moreover, some care coordinators have limited professional expertise with assessments and occasionally made errors when conducting, scoring, or interpreting them. To address this, Clifford Beers Guidance Clinic revised the assessment process so that clinical staff (such as social workers) instead of care coordinators complete the assessments with families. Care coordinators then review assessment results and work with

¹ Two significant features of Wraparound New Haven are distinct from the awardee's prior wraparound programs for children with behavioral health needs: (1) family members (as opposed to just the index child) enroll in the program and (2) the program focuses on the integration of physical and behavioral health.

families to develop a care plan. Although most care coordinators were satisfied with this shift, a few expressed concern that the change interferes with their ability to develop relationships with the families.

Wraparound New Haven's web-based care management software, Essette, also helped streamline assessments. The transition to Essette simplified tracking which assessments need to be administered, at what frequency, and to whom. Most care coordinators feel the software makes it easier to reference assessment results and develop an effective care plan.

Mental health services were sometimes difficult to access. In some cases, care coordinators faced challenges connecting family members—most often adults insured by Medicaid or without insurance—to needed behavioral health services. In response, Wraparound New Haven hired several clinicians to provide counseling to these family members while they seek a more permanent source of care.²

b. Primary component: patient and family engagement

Program staff and referral providers indicated the family-focused and family-driven

"I tell my families, 'I'm here for a period of time. You drive, and I'm with you in the car, but you take the turns, you go through the lights, and you make the right stops. I'm here to coach you, and help give you the tools, but when I'm not in car and no longer with you, then you have to make sure you have all the tools. While I'm here with you, ask me to help you with anything. That way, when I'm not here then you know what to do.'"

—Care coordinator

nature of Wraparound New Haven is innovative. Unlike many care coordination programs focused on a single participant, Wraparound New Haven views families' needs as interconnected and aims to engage and coordinate services for the entire family unit. Care coordinators work closely with families to identify their health and wellness goals, prioritize strategies for addressing those

goals, and develop their care plan. Families review their care plan with their care coordinator at least monthly and make any necessary adjustments.

Care coordinators' flexibility helps keep families engaged in the program. Depending on a family's needs and preferences, care coordinators will meet with families at various community sites, such as participants' homes, schools, churches, physicians' offices, hospital EDs, or inpatient units. Families also drive the meeting frequency and length—which can range from an hour to an entire day. Recognizing that this level of accessibility is demanding for staff, Clifford Beers Guidance Clinic allows care coordinators to adjust schedules if they need to meet with families after work hours or on weekends. Moreover, it reduced the number of families per care coordinator from 12 to 10 and hired an additional lead care coordinator to meet care coordinators' supervision and feedback needs for their assigned families. Several care

² Clifford Beers Guidance Clinic's outpatient mental health clinic serves children.

coordinators also mentioned that using flexible funds to help families cover necessities, such as bus passes or heating bills, helps families stay engaged during difficult times.³

Care coordinators sometimes find it difficult to maintain a family-driven focus and address the program’s high-priority goals (such as hospital readmissions). Care coordinators indicated that they draw on their training, such as motivational interviewing, to try to encourage families to address these goals. For instance, a care coordinator connected a family’s goal of increased financial stability with a program goal to reduce uncontrolled asthma. The care coordinator helped the family understand it will have a more predictable schedule, fewer work interruptions, and lower expenses if they eliminate asthma triggers in the home that result in ED visits.

Despite care coordinators’ efforts to motivate families, a few families remain disengaged from the program.⁴ Unless families ask to be no longer enrolled, care coordinators continue to check in every few weeks with those who are disengaged. Occasionally, these families engage again with the care coordinator when encountering a crisis, such as unemployment or a serious health issue.

c. Primary component: integrated care services

Clifford Beers Guidance Clinic’s initial proposal included a substantial emphasis on integrating physical and behavioral health services. Specifically, the awardee aimed for care coordinators to work closely with physical health providers to develop and implement family care plans and for care coordinators to be co-located with physical health partners, including at school-based health centers. Although Clifford Beers Guidance Clinic has embedded mental health staff at school-based health centers under other initiatives, it made limited progress on this program component for Wraparound New Haven during the first program year.

Clifford Beers Guidance Clinic is a well-respected behavioral health organization but has limited experience with physical health and appears to be struggling to integrate the two. During the first program year, Wraparound New Haven was unable to co-locate care coordinators at physical health provider organizations and received limited feedback from physical health providers on care plan development.⁵ Several barriers contributed to these issues: physical health providers’ competing demands and limited resources, the awardee’s lack of

³ In addition to cooperative agreement funding from the Centers for Medicare & Medicaid Services (CMS), Wraparound New Haven received \$250,000 in flex funds from the Connecticut Department of Social Services (DSS) to help families cover the expenses related to health and wellness goals.

⁴ We interviewed three of the seven care coordinators hired during the programs’ first quarter. These care coordinators indicated around 5 of the 31 families they work with were difficult to engage in the program.

⁵ Although the awardee has not embedded care coordinators at most physical health locations, it did embed a nurse at Yale New Haven Hospital system to facilitate referrals.

understanding of physical health providers' workflows, and lengthy negotiations with partners to establish processes for sharing participants' health information across provider organizations.

Some care coordinators are uncomfortable addressing families' medical health needs.

Many care coordinators indicated Wraparound New Haven's training sessions on chronic conditions were not useful and said they need additional guidance on their role of helping families manage those conditions. During the first program year, many care coordinators simply ensured families had a primary care physician and reminded them to attend appointments but did not actively help families manage their physical health.

Clifford Beers Guidance Clinic hired an on-site pediatrician and funded staff at partner organizations to improve Wraparound New Haven's ability to address physical health needs. The pediatrician, hired halfway through the first program year, completes medical intake forms for each family and meets with the care coordinator to help him or her understand the families' clinical needs. She is also developing additional physical health training for care coordinators and encouraging primary care providers to engage with the program. Because of her contributions to the program, Wraparound New Haven plans to hire an internist during the second program year to further facilitate the integration of physical and behavioral health for adults.

In addition, Clifford Beers Guidance Clinic provided a stipend for a pediatrician at an FQHC and funded an on-site nurse at a major children's hospital. These staff will help with referrals and facilitate communication between physical health providers and care coordinators.

d. Secondary component: health IT

Wraparound New Haven and its major physical health referral sites use an electronic medical system called EPIC to access families' health information and to communicate directly with other providers. Families can also view test results, schedule and review appointments, and receive automated health reminders about upcoming appointments. Wraparound New Haven also switched to a cloud-based management platform (Essette) to streamline the data collection process for care coordinators. (EPIC and Essette are separate systems; information from one must be manually entered into the other.)

The partnership with referral providers facilitated access to EPIC and enhanced interoperability. After initially planning to implement a direct-messaging system separate from EPIC, Clifford Beers Guidance Clinic concluded early in the initiative that the communication mechanisms in EPIC were sufficient for Wraparound New Haven. Wraparound New Haven was the first community-based program approved by the Yale New Haven Hospital system to pilot access to EPIC. This access enables program staff to send and receive secure messages to primary and specialty care providers.

Most Wraparound New Haven staff believe Essette streamlined data collection. Before a software vendor was selected, care coordinators used Google Docs to track assessments and care plan development. Most care coordinators find Essette saves time compared to Google Docs

because Essette allows them to easily view a family's program history, review assessment results, and add notes. Still, a few care coordinators expressed frustrations with the software, such as its inability to automatically calculate the results of assessments. In addition, some Wraparound New Haven staff are not very computer savvy and required additional training to effectively use this technology.

3. How does the awardee make decisions about program-related changes?

Clifford Beers Guidance Clinic is tracking program outcomes and assessing the impact of Wraparound New Haven on costs and utilization. Although the awardee is tracking program outputs and established some benchmarks for these measures (for example, care coordinators initially meet with families twice a week), it expects implementation to vary according to a family's needs. Given this variation, the awardee is more focused on tracking intermediate outcomes than output measures. These intermediate outcomes include increases in social support and social connections, improved health literacy and patient activation, and improvement in, and management of, chronic care conditions. In the first year, Clifford Beers Guidance Clinic and its evaluation contractors, Yale University School of Medicine and Health Management Associates, developed a plan for monitoring outcomes which includes analyzing changes in participant surveys and assessments as well as Medicaid claims data.

Self-monitoring during the first year was informal. Although Essette allows Clifford Beers Guidance Clinic to pull reports on program outputs (for example, overdue assessments), Essette reports were not regularly relayed to care coordinators. Most feedback was provided informally through meetings and case reviews with the lead care coordinator. However, the lead care coordinator was sometimes unable to provide extensive oversight and fidelity checks due to the number of care coordinators she oversaw. Clifford Beers Guidance Clinic hired an additional lead care coordinator to augment supervisory oversight and a more formal feedback loop may be established during the second program year.

Wraparound New Haven has implemented program changes based on feedback from staff and referral partners. Wraparound New Haven leaders hold frequent staff meetings to get input from care coordinators and clinicians. Similarly, Clifford Beers Guidance Clinic disseminates monthly progress reports to its physical health partners and meets with them individually on a regular basis. Examples of changes based on these discussions include transitioning responsibility for completing assessments to staff clinicians, hiring a staff pediatrician, and embedding a nurse coordinator at the partner hospital.

4. To what extent has the awardee begun to plan for or implement payment reforms?

Clifford Beers Guidance Clinic is in the early stage of developing its payment model. The awardee initially proposed that after the cooperative agreement period, DSS would pay for Wraparound New Haven services through a per-member-per-month payment model. However, DSS's shift toward innovative payment models has prompted Clifford Beers Guidance Clinic to consider other options, including a value-based purchasing arrangement with DSS or marketing the care coordination services directly to community providers and hospitals. In either case,

Clifford Beers Guidance Clinic may need to demonstrate the program's impact on health care costs to establish a sustainable payment model. However, care coordinators indicated that a significant portion of youth enrolled in the program are not as high cost or high need as the program initially aimed to enroll, so the program could face challenges reducing overall costs.

D. Impact evaluability assessment

After reviewing Clifford Beers Guidance Clinic's self-reports and conducting interviews with program staff, we concluded an impact analysis of Wraparound New Haven is feasible. The best approach is a difference-in-differences design that will analyze impact outcomes using Medicaid claims data for the treatment group in New Haven and a comparison group to be constructed in Hartford County, Connecticut. To enable this analysis, Clifford Beers Guidance Clinic has agreed to give the evaluation team a finder file that will allow us to identify program participants in the Medicaid claims data. Prior to providing the file, the awardee must execute a data use agreement with the Connecticut Department of Social Services. As of March 2016, negotiations between the awardee and the state were ongoing, and that has delayed the file's release.

As noted, Clifford Beers Guidance Clinic's overall recruitment goal of 2,635 direct participants includes both index children and any of their family members who opt to enroll. This will impact our analysis in several ways. For instance, we will assess some different outcomes for children and adult enrollees (for example, substance abuse and smoking rates will only be assessed for adults). Depending on the mix of enrollees, our analysis of some of these outcomes may be constrained by sample size. In addition, consistency in enrollment over time may prove challenging for Clifford Beers Guidance Clinic because family members can decide to enroll or withdraw over the course of the index child's participation.

E. Next steps

We look forward to continuing to work with the awardee for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include identifying all Medicaid beneficiaries in the treatment group, assessing baseline characteristics, and then identifying all eligible Medicaid beneficiaries in Hartford to construct a comparison group. We will then determine how well the groups match each other. If there are few or no statistically significant differences between the treatment and comparison groups, we will produce initial impact estimates for the first one or two quarters of program operations, depending on data availability and after creating outcome and explanatory variables. We will also conduct a propensity score analysis to better align baseline characteristics across the treatment and comparison groups. We will describe our findings in future reports.

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APPENDIX B.12

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

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REPORT

APPENDIX B.12

HCIA Round Two Evaluation: The Trustees of Columbia University in the City of New York

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–November 11, 2015)

Successes

- The Trustees of Columbia University in the City of New York have completed all of the preliminary steps necessary for the MySmileBuddy (MSB) program to be fully operational. The awardee signed contracts with partner organizations, obtained institutional review board (IRB) approval at all partner organizations, hired and trained community health workers (CHWs), updated the MSB software, developed a new data management system, and modified the electronic medical records (EMRs) of partnering pediatric dental delivery systems (PDDSs).
- With the support of the MSB technology, CHWs can maintain fidelity to caries science and to the MSB policies and procedures.
- CHWs reported some early successes in bringing about behavior change among participating families.

Challenges and strategies to address them

- Recruitment numbers are significantly below projections because of delays in launching the program and fewer-than-expected referrals from partnering PDDSs and the Head Start screening program. The program team frequently brainstorms about strategies for increasing recruitment.
- MSB's focus on disease management rather than on dental repair represents a paradigm shift for dentists, CHWs, and families. By educating individuals and using MSB educational technology, MSB staff are working to increase buy-in from families and providers.

Lessons learned

- Even after a new technology system is developed and tested, changes to the underlying software may require extensive and costly updates.
- More time for planning and for program start-up would have been beneficial, especially to deal with many logistical challenges, particularly those related to IRBs, data management, and contracts.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit interviews on November 11, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings;

(2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the MySmileBuddy (MSB) program, which is being implemented by the Trustees of Columbia University in the City of New York. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Columbia University's MSB program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, and key informant interviews conducted during a recent site visit to Columbia University. We also reviewed the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Columbia University's program, this report addresses four questions:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
 3. How does the awardee make decisions about program-related changes?
 4. To what extent has the awardee begun to plan for or implement payment reforms?
-

We also provide a brief summary of Columbia University's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

MSB, launched on May 11, 2015, is an intervention in which CHWs, supported by a tablet-based mobile technology, work with parents or caregivers of young children to conduct risk assessments, provide dental education, and develop strategies to prevent the progression of early childhood caries (ECC) in affected children. MSB has two primary, inter-related components: patient and family engagement, and health information technology (health IT). For the patient and family engagement component, CHWs meet regularly with parents to assess their children's risk for caries; teach parents about these risks; set family goals; regularly evaluate progress toward the goals; and provide social support, toothbrushes, and toothpaste. The health IT component is the MSB application that the CHWs use to guide their interactions with families. The application is designed to help CHWs and families plan, implement, and monitor positive oral health behaviors, including dietary control and use of fluorides.

The underlying principle for MSB is that if the parents can stop oral disease processes through dietary and dental hygiene practices, children will need less extensive restorative care. Other key characteristics of Columbia University's MSB program are described in Table 1.

The target population is:

- Children ages 2 to 6 who have ECC and no comorbidities, and whose parents speak English or Spanish and are age 18 or older
- Up to two qualified siblings of these children (that is, siblings in the same household younger than 6 [with caries if *older* than the index case, or with or without caries if *younger* than the index case])
- The parents or caregivers of these children

According to the awardee's theory of change for the MSB program, CHWs, assisted by MSB technology, can educate parents and engage them in setting goals and in planning actions to reach these goals. The support provided by CHWs would lead to changes in parents' behavior that reduce ECC and prevent additional cavities in the children. This would, in turn, decrease the need for expensive surgery to treat ECC, thereby saving money.

To implement the intervention, Columbia University has partnered with the following organizations:

- **Five hospital-based PDDSs.** The PDDSs identify eligible families in their clinics, collect data at baseline and follow-up, and provide standard care. One PDDS, New York University (NYU), also identifies eligible families through community screenings it conducts at Head Start day care centers and serves as a coordinator for all PDDSs.

- **A technical assistance provider.** Health Innovation Associates (HIA) provides training and support for the CHWs.
- **Four community-based organizations (CBOs), which are health and social service organizations, that employ the CHWs.** Each CBO is geographically matched to one PDDS (except for one CBO that is matched to two PDDSs that are only a few blocks apart).

The purpose of our first site visit to Columbia University was to collect detailed information on the following: the staff's and the stakeholders' experience with and progress to date in implementing MSB, changes to the program, facilitators of as well as challenges and barriers to implementation, and updates to the payment model. Table 1 shows the key characteristics of the MSB program.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Columbia University to the implementation and monitoring contractor, and (3) data gathered during initial telephone discussions with the awardee and our site visit to Columbia University from October 27 to October 29, 2015, and two telephone interviews conducted on November 10, 2015. For our document review, we used a standardized tool to abstract key data from the application, four quarterly reports submitted to the implementation and monitoring contractor, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed program leaders at Columbia University, NYU, and HIA; CHWs and their managers at CBOs; and clinic directors and residents at PDDSs. We visited two CBOs (Northern Manhattan Perinatal Project and Make the Road) and three PDDSs (Bellevue, New York Presbyterian, and NYU). The two telephone interviews were with the Montefiore CBO and the Montefiore PDDS. We also attended a meeting of the program team with staff from Columbia University, NYU, and HIA; all of the CHWs; and the CHWs' supervisors.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we made audio recordings of all interviews and transcribed them. A team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review, the evaluation team synthesized the material into this narrative on Columbia University's implementation experience.

Table 1. Columbia University: MSB characteristics at a glance

Program characteristic	Description
Purpose	CHWs, supported by a tablet-based mobile application, work with parents of young children to prevent the progression of ECC.
Components	<ul style="list-style-type: none"> • Patient and family engagement (primary): CHWs work with parents or caregivers of young children with ECC to conduct risk assessments; provide dental education, toothbrushes, and toothpaste; and develop strategies to prevent the progression of ECC. • Health IT (primary): MSB is a mobile, tablet-based application CHWs use to guide their interactions with families.
Target population	<ul style="list-style-type: none"> • Children ages 2 to 6 who have ECC and no comorbidities, and whose parents speak English or Spanish and are age 18 or older • Up to two qualified siblings of these children (that is, siblings in the same household younger than 6 [with caries if <i>older</i> than the index case, or with or without caries if <i>younger</i> than the index case]) • The parents or caregivers of these children
Theory of change/theory of action	A CHW-based intervention supported by MSB technology to educate parents and engage them in goal setting (for example, cut back on sugary drinks) and in planning actions to reach these goals (for example, buy less juice). This approach would lead to changes in parents' behavior that reduce their children's ECC, thus decreasing the need for expensive surgery to treat ECC, thereby saving money and improving the children's oral health.
Payment model	<p>Fee-for-service</p> <p>Columbia University originally considered developing a per-beneficiary per-month (PBPM) fee schedule to cover CHW salaries and other costs; because of recent changes in federal Medicaid policies, the team is now investigating the possibility of Medicaid paying CHWs directly on a fee-for-service (FFS) basis.</p>
Award amount	\$3,870,446
Launch date ^a	May 11, 2015
Setting	<ul style="list-style-type: none"> • Recruitment conducted at PDDS clinics and Head Start day care centers • Services delivered at participants' homes, locations in the community, or over the telephone
Market area	Urban
Market location	New York City
Core outcomes	<ul style="list-style-type: none"> • Increased access to dental care, as indicated by the percentage of child participants who had at least one dental visit during the measurement period • Changes in parent and CHW beliefs, attitudes, and self-efficacy with respect to children's oral health, as measured by pre- and post-intervention surveys • Development of parent-defined goals and action plans • Parents' behavioral change, as reported by parents • Percentage of children who demonstrate no new cavitations beyond what existed at the time of enrollment • Reduced costs for ECC, as modeled by Medicaid and hospital costs

^aAfter a planning period, the awardee's program became operational as of this date.

C. Findings

1. How effectively has the program been implemented?

Columbia University planned to launch MSB on March 1, 2015, but this did not occur until May 11, 2015. A variety of challenges contributed to the delay, including the need for unexpected software updates to the MSB technology (discussed further in Section 2), a required change to the data management system, and delays in receiving IRB approvals from participating PDDs and CBOs.

At the end of the fourth quarter, only 114 children had enrolled in the MSB, 12 percent of the targeted 932 children (Figure 1). At the time of the October site visit, 257 children had

“That’s really all we talk about is getting those numbers up.”

— Partner organization

enrolled. Delays in the launch date contributed to the low recruitment numbers because the program lost more than two months of recruitment time and because the Head Start screening program had ended for the summer by the time the program was

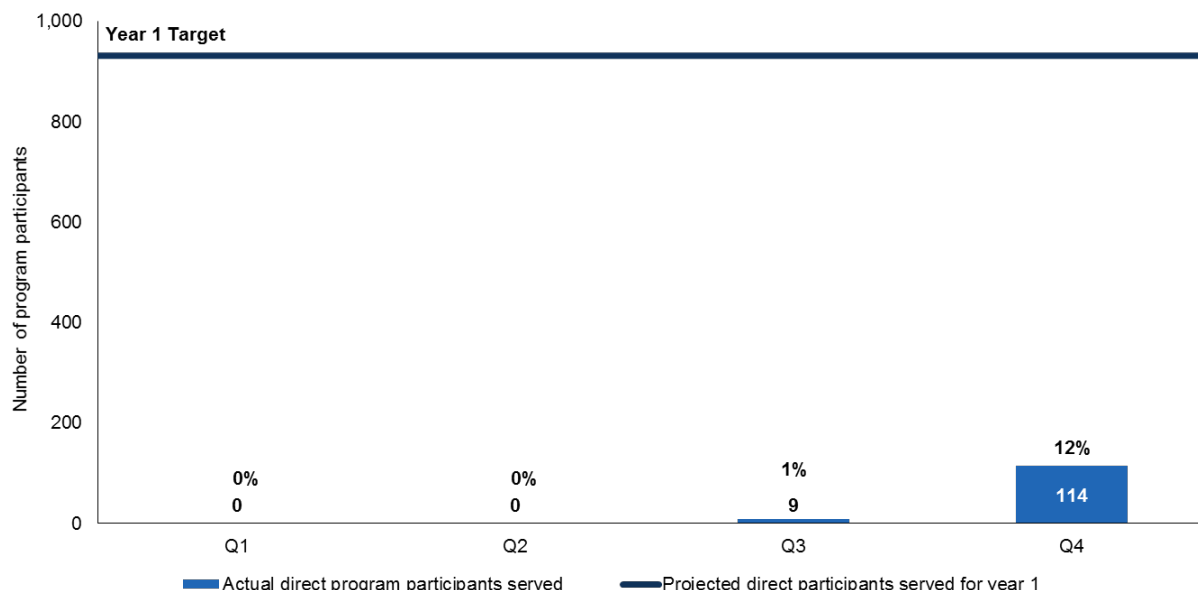
fully operational. Recruitment picked up after school started but is still not on track to make up the deficit. As discussed in detail later in this narrative, the low enrollment is a key challenge for and focus of the program team.

Columbia University made several changes in program implementation. Most of the changes involved modifications to the recruitment strategy as a way to increase enrollment. As we discuss below, these modifications include expanding the eligibility criteria, implementing a variety of strategies to help residents at the PDDs remember to refer eligible families to the program, and making efforts to increase the proportion of referred parents who enroll.

The awardee also changed some of its partnerships. When Columbia University applied for the grant, it had planned to hire 10 CHWs directly but later decided to have the CHWs integrated into CBOs. Program staff explained that integrating CHWs into CBOs would make it more likely that the program could be sustained, give the CHWs greater support, and expand the resources that CHWs could offer to participating families. Columbia University had also proposed to partner with 12 PDDs, but it is partnering with 5. The awardee reduced the number of PDDs because some were unwilling to commit to the program’s disease management approach.¹ In doing so, the awardee also created cost savings that it used to cover the cost of the unanticipated updates that were needed for the MSB technology.

¹ When the disease process is under control, teeth will recalcify, and cavities might not require repair. Columbia University asked that participating PDDs be willing to consider foregoing repair in cases that were not too far advanced, but some PDDs felt that all cavities should be repaired.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. Columbia University does not have indirect program participants.

Other changes relate to how CHWs work with the families. Several interviewees commented that CHWs must have the flexibility to respond to the needs of the families. Columbia University has therefore allowed CHWs the freedom to change where they meet with families, how often they meet, and whether they meet with parents or caregivers.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

In this section, we discuss the key program facilitators and barriers for each of the two program components—health IT and patient and family engagement. The two components are closely linked because the tablet-based mobile platform is used to support the patient- and family-engagement work. Although we distinguish between the components for evaluation purposes, the program staff consider them part of the MSB program as a whole. As a result, the key program facilitators and barriers affect both components.

a. Primary component: health IT

The MSB technology is a tablet-based application in Spanish and English that has six key features:

1. Parent engagement, education, and assistance (including culturally appropriate videos and images, interactive assessment capabilities, and educational modules)
2. ECC risk assessment (including a series of targeted questions and a sophisticated “diet widget” to score dietary cariogenicity)
3. Individualized risk score computation, based on a built-in, modifiable, science-based risk algorithm
4. Family-specific goal setting in which a pre-populated list of goals is tailored to current risk-related behaviors
5. Family-designed action planning that has an open field for parents and, with support from CHWs, that is used to specify which family member will do what, when, where, and how
6. Wrap-around support (CHW resources, family resources, tracking, and follow-up)

Interviewees reported that CHWs and families found MSB appealing and easy to use. Designed so that the parents and children can complete it themselves, MSB uses videos and

“[MySmileBuddy] is very cartoony and interactive. It’s friendly, it’s fun. The parents like doing it.”

— *Partner organization*

graphics that keep families engaged. A CHW supervisor commented that CHWs also like the app—they know that they are teaching exactly what they should be teaching because it is all right there in front of them.

Although the MSB technology was fully developed and tested before the cooperative agreement started, Columbia University had to make several modifications nonetheless. When the awardee received HCIA R2 funding, it found that changes had occurred to the software platform on which MSB was originally developed. The changes required expensive software updates. In addition, because the HCIA R2 program is larger than previous projects in which MSB was used, and because CHWs make several visits to the families, Columbia University had to change the administrative/portal side of MSB to integrate more data points (such as the number of patient interactions and the number of siblings). Finally, ongoing changes are required because, as CHWs use the tool, they identify needs for additional improvements.

b. Primary component: patient and family engagement

After families enroll in the program, CHWs meet with the parents or caregivers to teach them about factors that increase the risk of caries, set family goals and action plans, consider facilitators of and barriers to carrying out their plans, and provide toothbrushes and fluoridated toothpastes. During the course of a year, CHWs have follow-up meetings with the families on an as-needed basis (in person or by phone) to assess progress in reaching their goals, reassess whether the risk for caries has been reduced, and provide additional toothbrushes and toothpaste.

In this section, we will first discuss the factors related to CHWs (given that they are central to engaging the family) and then address specific engagement issues.

CHWs can more effectively address the barriers to families' positive oral health behaviors than dentists can. CHWs learn a great deal about families' oral hygiene practices by going to their homes and observing their behaviors. In addition, because CHWs are members of the community, and most of them speak Spanish, families are more open than they might be with a medical professional. Moreover, with training and the support of the MSB technology, CHWs can give families accurate information about oral health.

"The community health workers are really great, their communication skills are really great. The messages that they are giving the parents are extremely thorough, and very much complementary of the things that we say to them as far as dental health is concerned."

— PDDS director

Columbia University invested heavily in selecting and training quality CHWs. HIA helped to develop the criteria for hiring the CHWs, commenting that hiring for this job differs from hiring for other types of jobs because the personality characteristics matter more than academic achievements or credentials. "With CHW programming, your success really depends on who you recruit, so we invested heavily in the start-up of these programs," said a representative of a partner organization. Several staff members commented on the talent and dedication of the CHWs.

CHWs vary in the amount of experience and training they had prior to working on the MSB program. All CHWs received five days of training from HIA on general CHW skills and four days of training from Columbia University on oral health and MSB. CHWs thought that both training sessions were excellent. The awardee provides good support for the CHWs not only with extensive training, but also with a reasonable salary and tools to support their work (such as cell phones, subway cards, iPads, and branded jackets and tote bags).

"A lot of people work with community health workers . . . they don't necessarily invest in community health workers, they are like, 'You're a community health worker, go in the community and do your work.' I think here we really take the time to invest in community health workers and develop their skills and see what they need and make sure that they are supported. I think that's very important."

— CHW supervisor

Several interviewees commented that the program also empowers the CHWs, giving them a voice in program implementation and making them feel strongly invested in its success. The awardee has held team meetings nearly every week with its program staff, all of the CHWs and their supervisors, and staff from HIA and NYU. At these meetings, the CHWs help to identify problems and develop solutions to them.

CHWs and their supervisors commented that the weekly meetings also provide an opportunity for the team to discuss challenges and brainstorm about solutions with their peers and other program staff. Several interviewees noted that, as the CHWs' workload increases with more participants, it will not be possible to continue meeting as frequently, but for now, the weekly meetings are useful.

Input from the CHWs has led to a number of changes in program implementation. For example, Columbia University initially envisioned that CHWs would have the family meetings

at the parents' homes, but CHWs reported that some families did not wish to do this. CHWs now meet with families in their homes or at any location where families feel comfortable. CHWs found that a caregiver other than a parent sometimes spends more time with children during the day that the parent does, so the caregiver has more influence on the child's oral health. Columbia University decided that, when it is appropriate, the CHWs will work on behavior change with the caregiver rather than parents. The awardee originally planned that all families would have six to eight follow-up visits over the course of a year but has since relaxed this requirement because CHWs reported that some families need more visits and others need fewer.

Columbia University encountered some challenges in hiring and training CHWs.

Hiring delays were mostly a result of issues related to union rules. In addition, one CHW resigned for personal reasons two weeks after starting work. (At the time of the site visit, this was the only turnover in CHWs reported by interviewees). The awardee had hoped to train all of the CHWs at once, but because of the staggered start times, it had to provide the training at three different times, which added to the cost of the training.

CHWs confronted challenges to enrolling families in the program. When CHWs receive contact information for a family, they first contact the family to explain more about the program and gauge the family's interest in enrolling. At the time of the site visit, CHWs had enrolled 68 percent of the families for whom they received contact information. CHWs commented that they sometimes experienced difficulties when calling parents after the child's screening: the contact information was sometimes incorrect, and parents sometimes did not understand what the program was. Parents whose child was identified through the Head Start screenings were most likely to be unclear about what the program was because the parents were not present when the dentist screened the child. Consequently, the dentist could not talk to them about MSB—the parents simply received a form about the program when they picked up their child at the end of the day. CHWs have more success with families identified in the PDDSs—especially if the CHWs were at the clinic and could meet the family at the time of the referral. Having met the CHW, families felt more comfortable when the CHW later made contact to discuss enrolling in the program.

In some cases, families have been reluctant to participate. CHWs commented that parents worry about the potential cost of the program and the time it would require. CHWs

"The priorities of these families are walking down the block safely and the food insecurities, economic insecurity, and education difficulties. Talking about brushing your teeth is just not—if [the children] are not in pain, mom's not going to worry about it."

— Partner organization

assure them that the program is free and that a CHW can work around their schedule. Several interviewees from various types of organizations noted that the families have complex lives, and oral health is usually not a top priority. CHWs also often need to address some of the families' other pressing needs (for example, food insecurity, inadequate housing, and unemployment) before

they can address oral health concerns. Through their training, and with the support of their CBOs and HIA, the CHWs are well prepared to address these problems (for example, by helping the families to enroll in programs such as Medicaid and food assistance programs like SNAP, and by

connecting them to services such as English language classes and pest control). CHWs also have to work through parents' cultural ideas related to oral health and help them to see the importance of disease management. For example, many parents believe that they do not need to worry about preventing cavities in baby teeth because those teeth will fall out, and parents think that taking their children to see the dentist periodically is all they need to do to address oral health. Some interviewees commented that they thought giving incentives to families for participation would significantly increase enrollment, but Centers for Medicare & Medicaid Services (CMS) is not legally permitted to provide incentives for participants. Despite the challenges, CHWs noted that many families are enthusiastic about the intervention. For example, one mother was glad to be a part of the program because her oldest child has had a lot of cavities, and the mother does not want her younger children to have the same problem. As a result, she is working actively with the CHW.

"This could be a really, really good model, and we just haven't given it the opportunity to be a demonstrated success because we couldn't provide incentives."

— Partner organization

CHWs had difficulty conducting follow-up meetings with some families. Some parents do not answer the phone when the CHWs call, or they answer but tell the CHW to call back. As a result, the CHWs can spend a significant amount of time trying to track the families down. Interviewees noted that the CHWs will have less time to spend on these types of activities as the number of families they work with increases. The program team is discussing when families should be considered lost to follow-up and how much effort the CHWs should put into trying to follow up with families who are not responding. At the time of the site visit, the awardee had not classified any participants as lost to follow-up or disenrolled.

Many of the families in the program are not from the communities in which the CBOs are located. Although the CBOs and PDDSs are geographically matched, they sometimes are not very close together, and the families served by the PDDSs can come from a broad catchment area. Similarly, for families identified through the Head Start screening, Columbia University strives to match the families to the closest CBO, but travel time may still be lengthy. When the families live far from the CBO, CHWs can travel an hour each way to meet with the family. If the family misses the appointment, the CHW loses a significant portion of her work day. In addition, when the CBO is located outside the community in which a family lives, CHWs are not in as good a position to support the family because they are less familiar with resources available nearby.

c. Other barriers and facilitators

Low levels of recruitment have been the primary challenge. The low levels of recruitment are largely attributable to the delay in project launch, but even after the launch, recruitment remained lower than expected. As discussed, several issues prevent all of the families referred to the program from being enrolled. However, the number of referrals (which come primarily from residents at participating PDDSs and from the dentists conducting

screenings at Head Start centers) has also been low. The reasons for the low number of referrals are described below.

Interviewees reported that dental residents at the PDDSs think the program is useful, but because of their workload, the residents often forget to mention the program to eligible families. Staff at NYU and Columbia University regularly communicate with the PDDS clinic directors, encouraging them to identify strategies to increase the number of referrals. Strategies vary across the PDDSs, but they include reminding residents during their daily huddles and by posting fliers, finding an easily accessible place to store the referral forms, providing incentives to the residents such as an extra vacation day for the one who refers the most patients, and having a pop-up on the EMR for all children in the age range to remind the residents to consider MSB. CHWs have also started to spend two days a week in the PDDS waiting rooms. Their presence helps to remind the residents about the program, and they can speak with parents about the program. Some residents commented that they do not have a good sense of what happens in the program after the families receive a referral, and that knowing more about the program would help to motivate them.

For the PDDS and the Head Start screenings, Columbia University expected more children to be screened and more children to be eligible. At some of the PDDSs, many of the children served are not eligible for the program because they are either outside the age range, or they have comorbid conditions. In some of the Head Start programs, relatively small proportions of children have been identified as having ECC. Also, the program was launched in May 2015, and NYU does not conduct Head Start ECC screenings during the summer. In the PDDSs and the Head Start programs, many parents speak languages other than English or Spanish. The reduction in the number of participating PDDSs also significantly reduced the pool of children. To address the lower-than-anticipated number of referrals, Columbia University expanded the eligibility criteria to include siblings of eligible children if the siblings are younger than 6.

Staff vary in how they see the success of strategies to address lagging referrals and recruitment. Some interviewees, such as PDDS faculty, said that they have overcome the challenges, and recruitment is on track. Others, such as the CHWs and their supervisors, said recruitment is still inadequate, and alternative strategies are needed. Specifically, CBO staff recommended having dentists screen children at special community events organized by the CBOs. During the summer, when recruitment was particularly slow, the CBOs organized several events to screen and recruit eligible children. CBO staff found these events to be beneficial because the families they identified live in the community near the CBO; as a result, CHWs can more easily reach the families and connect them to resources. Interviewees from NYU, which coordinates the PDDS and Head Start screenings, disagreed with the CBOs, contending that these events were inefficient because, to attend the events, several staff had to take half a day away from other responsibilities, and few eligible children were identified.

One interviewee commented that the timeline was ambitious even before the delays. To assess outcomes, program staff must follow participants for one year after enrollment, and they must therefore complete enrollment by the end of the second year of the three-year program.

Program leaders acknowledged that recruiting the anticipated 1,936 participants by the end of the second year would have been challenging even without the unexpected administrative delays that arose in the first year. Because of the delays, enrollment was not in full swing until almost the end of the first year, leaving program staff just over one year to recruit.

Data collection for the outcome evaluation has also posed challenges. The participating PDDSs planned to collect information on a variety of outcomes (gingival scores, pain, and plaque) at baseline and at 12 months. However, EMRs for dentistry are still relatively new, and information on these types of measures is not available in a quantified, searchable form. NYU worked with the PDDSs to determine how to add fields for these measures to their respective EMRs and get staff to use them. One interviewee also noted that detecting clinical changes in 12 months is unlikely because caries progress slowly in many children. In addition, families must bring their children in after 12 months for a check-up. Ensuring that this happens will be a critical job for the CHWs.

Interviewees explained that the characteristics of the participating organizations offered advantages as well as some disadvantages. In terms of infrastructure and organization, the Columbia College of Dental Medicine has made a significant commitment to children's oral health. It has a large, multi-professional department, the Section of Population Oral Health, whose mission supports the program. In addition, the university overall provides data management and research resources as well as human resources, such as social workers, nutritionists, pediatric dentists, pediatricians, and CHWs. On the other hand, the university bureaucracy contributed to delays and required budgetary changes. For example, because of a university-level data breach in 2010, the MSB program was unable to use a stock data management program as planned, but was required to use newly-approved university-based custom data management resources—a change that entailed significant additional expense and delays.

Similarly, working through the PDDSs had benefits and constraints, because of the fact that they are large university teaching clinics. The camaraderie among the chairs of the PDDSs and their commitment to advancing the field of pediatric dentistry prompted them to participate in the program. However, PDDS chairs also must deal with the bureaucracy of the hospital setting, including the hospital-level standards for IRB and data security. The bureaucracy has made it difficult to change recruitment procedures; hospital leaders must approve even such minor changes as placing a flag on a chart or hanging a flier on a wall. In addition, dental residents in PDDSs face many competing demands, such as teaching and cooperating with other research projects.

The characteristics of Columbia University's partners, NYU and HIA, have important advantages for the program. NYU is in a good position to coordinate the efforts of the PDDSs. It is the lead pediatric dental residency program for New York City's 12 programs of this type, and it has well-established relationships in, and credibility with, the pediatric dental community. Its pre-existing dental screening program in Head Start centers also provided a ready-made means to screen large numbers of children in the target age range to identify potential participants. The

president of HIA is a nationally recognized leader in the CHW field, and he has decades of experience supporting CHWs and helping projects and organizations integrate CHWs into their operations.

Several interviewees commented that the main, overarching challenge of the program is that it represents a paradigm shift in how people think about ECC, from a focus on repairing teeth to a focus on managing disease. One interviewee commented that the program is attempting to shift the entire culture and practice of pediatric dentistry, and that change on this scale takes time. The scale of the change is a factor in some of the challenges previously described, including the unwillingness of some PDDSs to participate and some families' lack of interest in enrolling. Program leaders noted that even the CHWs did not have a visceral understanding of the problems involved in the dental repair approach until the NYU project lead showed them a video of a little girl in an operating room having her teeth repaired, and they saw what the experience was like (including nasal intubation, general anesthesia, and an IV drip). CHWs also spent some time in the dental clinics and personally witnessed the difficulties of working with children to repair their teeth (for example, hearing their fearful reactions to the process).

"[The PI's] championship of this whole effort is extraordinary. He's also an icon in his community of practice and so in terms of just setting this as a best practice amongst different academic and health care institutions, he's like one of the few individuals in the world that has the power to be able to do something like that, because he has that presence and he has that professional status."

— Partner organization

Several interviewees said that the principal investigator (PI) was key to the potential success of the program. They noted that he brings passion, energy, and commitment to the effort, and his stature in the field of pediatric dentistry gives him the leverage to effect change. It was evident from our discussions with him and other MSB staff, and from our direct observation of a staff meeting, that he fosters a collaborative approach. For example, he often asked CHWs for their

opinions and feedback and included them in creating solutions to problems.

3. How does the awardee make decisions about program-related changes?

Columbia collects implementation data in a variety of ways. The MSB technology and Qualtrics software gather data on each participant. In addition, the CBOs submit a spreadsheet at the end of each week that summarizes the CHWs' activities (such as the number of home visits and the number of telephone calls). The weekly meetings also allow Columbia University to monitor progress on implementation and to do group problem solving. Staff from NYU meet regularly with the PDDS staff to discuss the project and troubleshoot any problems. In the fall of 2015, the PI began to talk directly with the PDDS staff to identify ways to increase recruitment. The awardee tracks progress on its outcomes through the MSB and Qualtrics data collection, pre- and post-surveys of parents and CHWs, and the EMRs of the PDDSs.

CMS requires Columbia University to collect Medicaid numbers from program participants. CHWs reported that when they asked potential program participants for their

children's Medicaid numbers, parents became suspicious because they felt as if someone was going to be making money off of them. At the time of the site visit, the awardee's staff had decided to obtain the Medicaid numbers from the PDDSs and NYU, rather than from the parents.

4. To what extent has the awardee begun to plan for or implement payment reforms?

At the time Columbia University applied for the grant, federal regulations did not allow unlicensed health care workers to be reimbursed for preventive health care. Because this regulation precluded direct payment to CHWs, the awardee envisioned a payment model that would mimic a state- and/or managed care-administered, nonrisk payment to dentists for caries management services delivered by CHWs under the dentists' oversight. If this model were fully implemented as state Medicaid policy, private pediatric dentists who treat ECC would receive a PBPM management fee from either the state Medicaid authority or its managed care vendor for children with ECC for whom surgery can be avoided. These dentists would use the PBPM to pay salaries, fringe benefits, and costs associated with MSB (for example, transportation, tablets, and mobile device data plans).

Since the application was submitted, however, CMS approved a prevention delegation regulation that allows unlicensed health workers to receive payment if the state files a state plan amendment. This mechanism would allow CHWs to be paid by Medicaid directly. Columbia University is communicating with staff in the New York State Medicaid redesign group to see what approach the state is likely to take. Information that Columbia University has received suggests that, if the state adopts the prevention delegation regulation authority, Medicaid would pay the CHWs on a FFS rather than a PBPM basis. Although many details remain unknown, Columbia University will likely model its analysis on a FFS payment directly to CHWs.

The awardee had planned to assess dental treatment costs by monitoring Medicaid dental claims submitted by the PDDS, but it discovered that the hospitals do not submit a substantial portion of claims that the dentists generate. Therefore, with approval from the CMMI project officer, Columbia University has developed a shadow tracking system to assess costs by using the claims generated rather than the claims submitted.

D. Impact evaluability assessment

After assessing the evaluability of Columbia University's MSB program, we have concluded that a rigorous impact analysis may be feasible. We are tentatively recommending a difference-in-differences design with an external, matched comparison group. However, aspects of the program's design and enrollment procedures will present serious challenges to conducting a rigorous impact analysis. If we are able to use a difference-in-differences design, we will estimate the difference in outcomes following the intervention for intervention participants and for matched individuals drawn from New York City. Next, we will subtract from this post-intervention difference any difference in outcomes between the two groups before the intervention began. This approach will isolate the program impact from any constant differences between the groups (observable or not) that affect outcomes but that remain after matching. Given the projected sample sizes, we estimate that this design will be able to reliably detect

impacts on many key outcomes. However, the awardee has had issues with recruitment and might not reach a sample size of 1,152 participants—the minimum necessary to have 80 percent power to detect a 10 percent effect on the receipt of an annual dental visit. Moreover, identifying a matched comparison group through claims data will be challenging. We might need to restrict the treatment sample in order to make the treatment and comparison groups similar. If we are unable to implement the difference-in-differences design, we will recommend a pre-post design through which we can assess changes in outcomes for the treatment group before and after it receives the intervention.

E. Next steps

We look forward to continuing to work with Columbia University for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include obtaining the list of all Medicaid participants and New York City Medicaid data from New York State. Once we have data and a sample that is large enough, we will be able to assess whether we can identify a comparison group by using claims data. If we can, we will use propensity score matching to identify a comparison group and compare the baseline characteristics of the treatment and comparison groups. After we have achieved sufficient balance on covariates for the treatment and comparison groups (a standardized difference of less than 10 percent), we will produce initial impact estimates for the first one or two quarters of program operations, depending on data availability, after creating our outcome and explanatory variables. We will describe our findings in future reports.

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APPENDIX B.13

DETROIT MEDICAL CENTER, **VANGUARD HEALTH SYSTEMS**

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REPORT

APPENDIX B.13

HCIA Round Two Evaluation: Detroit Medical Center, Vanguard Health Systems

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 28, 2015)

Successes

- The Detroit Medical Center achieved its goal of starting enrollment within the first two to six months of when it was notified about receiving a cooperative agreement from the Center for Medicare and Medicaid Innovation (CMMI). In addition, the Detroit Medical Center had all Gateway to Health centers operational and fully staffed by August 2015.
- As of October 28, 2015, the Detroit Medical Center had enrolled 728 patients into the Gateway program, and these patients made 1,595 visits to all Gateway centers combined. Through these visits, the program's multidisciplinary team of clinical providers and frontline staff is successfully providing participants with better access to primary care.

Challenges and strategies to address them

- Staffing the Gateway centers was more challenging than expected because of the centers' extended evening and weekend hours and because funding under the cooperative agreement is limited in time. To address this issue, the Detroit Medical Center recruited mid-level providers, such as nurse practitioners, to lead the Gateway clinical teams in place of physicians.
- The Gateway program triggered concerns because CMS had recently conducted a review of Detroit Medical Center for a potential Emergency Medical Treatment and Active Labor Act (EMTALA) violation, which was unrelated to Gateway. The concerns of program leaders were mitigated after CMS found the Detroit Medical Center ED triage processes and Medical Staff Bylaws, which encompasses the medical screening examination (MSE) used to identify potential Gateway patients, to be compliant with EMTALA's rules and regulations.
- Program leaders at the Detroit Medical Center were concerned that patients experiencing a true medical emergency might be inappropriately referred to a Gateway center, which would violate the Emergency Medical Treatment and Active Labor Act (EMTALA). This concern was mitigated by a review conducted by the Centers for Medicare & Medicaid Services (CMS) of hospital processes associated with EMTALA requirements. The review was not related to the Gateway program, but through a return visit to the medical center, CMS found that the medical staff's bylaws and the emergency department (ED) triage processes, which include the medical screening examination used in the Gateway program, are compliant with EMTALA.

Lessons learned

- The Gateway program leadership team learned that gaining the support of internal stakeholders was crucial to program success; that is, in order for the program to be effective, leaders and clinical staff in the ED had to endorse and champion the Gateway centers.
- Although it is easy to identify potential Gateway participants through electronic medical records (EMR), program enrollment may be impeded because patients must present themselves in the ED in order to be recruited. In addition, variation in screening by ED staff may affect how successfully the program reaches the intended patients.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 28, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded the Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014 to August 2017. CMMI selected awardees whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2, programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Gateway to Health program, which is being implemented by the Detroit Medical Center. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 has focused on developing a baseline understanding of Detroit Medical Center's Gateway program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to the Detroit Medical Center, and a review of the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the Detroit Medical Center's program, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the Detroit Medical Center's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The Detroit Medical Center designed the Gateway program to provide ongoing primary care services in a primary care medical home (PCMH) model to people living in Detroit who have been identified as very frequent users of the ED. Such individuals have no primary care provider on record and have one of seven chronic conditions—(1) diabetes, (2) asthma, (3) hypertension, (4) congestive heart failure, (5) depression, (6) chronic obstructive pulmonary disease (COPD), and (7) HIV/AIDS.

Detroit Medical Center staff have noted that a large number of Detroit residents use EDs for primary care; many of them are Medicaid or Medicare beneficiaries with no primary care provider (PCP). The awardee identified several reasons for the misuse of EDs among Detroit's population: poor access to primary care resulting from a shortage of primary care physicians in Detroit; barriers to primary care treatment, including limited transportation, insufficient hours of access, and the belief that care received in the ED is superior; and a high disease burden in the city, especially for the chronic conditions listed above.

The Gateway centers are located adjacent to three of Detroit's largest EDs—at Sinai Grace Hospital (SGH), Children's Hospital of Michigan (CHM), and Detroit Receiving Hospital (DRH), all of which are operated by the Detroit Medical Center. The Gateway centers at SGH and CHM are co-located with existing clinics in or near the hospital. The DRH center is located within the ED, which gave up space to accommodate the center.

Initially, DRH also housed a fourth Gateway center within the Rosa Parks Geriatric Center, where elderly patients received care. However, the clinic lacked the space needed to effectively run the Gateway program parallel with the Rosa Parks clinic. Therefore, the Detroit Medical Center decided to integrate the Rosa Parks Gateway Center into the main DRH Gateway Center, thereby allowing the site to run two shifts, offer longer hours of operation for patients, and usually treat geriatric patients early in the day.

By co-locating the Gateway centers within the EDs, the Detroit Medical Center can to (1) offer patients seeking unnecessary ED care with the option of receiving immediate access to primary care at a Gateway center, (2) implement a PCMH model, (3) extend hours of primary care, and (4) provide ongoing medical services to low-acuity patients with chronic conditions. As defined by the Detroit Medical Center, the Gateway program launched January 20, 2015, starting at SGH.

The awardee recruits and enrolls patients through a two-stage process. First, it tags as “potential Gateway (PG)” all patients in the hospital’s EMR who meet the program’s eligibility criteria. Second, once patients are tagged, PG patients are enrolled through three paths. The primary path is through the ED. When any patient presents in the ED, a triage nurse conducts a uniform triage assessment through which the patient is assigned a nationally standardized Emergency Severity Index Score on a scale of 1 (high acuity) to 5 (low acuity). Patients with a score of either 4 or 5 are considered low acuity and, they undergo a medical screening examination (MSE) conducted by a triage nurse. Depending on the results, the triage nurse connects the patient to a Gateway navigator. The navigator asks the patient whether he or she has a PCP, and if not, the navigator offers the patient an opportunity to receive care at a Gateway center and provides a pamphlet explaining this opportunity, the types of services provided by the center, the patient’s option to receive care through a PCMH, and the freedom to opt out at any time. Navigators escort consenting patients to the appropriate Gateway center.

The second path applies to patients who are tagged as PG and who present in the ED with a true medical emergency. The triage nurse does not refer these patients to a Gateway navigator. In these cases, navigators (if the patient is treated in the ED) or social workers (if the patient is admitted to the hospital) inform patients that, after they are discharged, they may receive follow-up services at a Gateway center.

The third path is based on a list generated by the Detroit Medical Center of about 1,000 potential PCMH patients who are very frequent ED users (defined as more than five ED visits in a year) and who may partly meet the remaining eligibility criteria for the program. The awardee has reached out to patients on the list by telephone rather than waiting for them to present at the ED.

The Gateway center acts as a PCMH for participants with chronic health conditions. Gateway program leaders modeled their PCMH after the Southcentral Foundation Nuka System of Care, and they are currently working toward PCMH accreditation. The PCMH model provides services for targeted individuals’ health care needs, replacing high-cost episodic care received in the ED with coordinated, long-term primary care. The Gateway PCMHs employ nurse practitioners (at DRH and SGH) or physicians (at CHM) who serve as PCPs. In addition, the Gateway PCMH care teams include a registered nurse care manager, a certified medical assistant, a behaviorist, a nutritionist, and a pharmacist educator.

Patients must first orally consent to receive care at a Gateway center. A navigator then walks patients to the Gateway center from the ED. Once patients are at the center, a medical assistant

or a registered nurse (RN) answers their questions, obtains written consent to participate in a study as required by an institutional review board (IRB), and performs some clinical duties. The PCP then checks the patient, identifies the full range of his or her needs, and refers the patient to other members of the care team for appropriate services. In addition to seeing new patients as they are initially referred to a Gateway center from the ED, the Gateway team schedules follow-up appointments and conducts outreach to support patients in keeping their appointments. At the same time, the Gateway centers operate with an open-access policy, trying to ensure that the centers serve new and returning patients without an appointment. Once patients enroll, ED staff flag Gateway patients in the EMR in order to offer them immediate access to primary care at the Gateway center if they return to the ED.

Gateway's theory of change/theory of action (TOC/TOA) holds that increasing participants' access to a usual source of primary care will lead to better management of chronic conditions and fewer ED visits. The Detroit Medical Center focuses on changing participants' behaviors by offering patients seeking care at an ED the option to receive immediate access to primary care at Gateway centers. In addition, the awardee hypothesizes that providers serving Detroit Medical Center patients—both inside and outside the Gateway centers—who obtain PCMH training, education, and ultimately, certification will be better able to meet the community's medical needs.

Other key characteristics of the program are shown in Table 1.

Table 1. Detroit Medical Center: Gateway characteristics at a glance

Program characteristic	Description
Purpose	The awardee designed the Gateway program to provide ongoing primary care services in a PCMH model to people living in Detroit who have been identified as very frequent users of the ED and with no provider and one of seven chronic conditions.
Components	<ul style="list-style-type: none"> • Medical home (primary) • Education and training (secondary)
Target population	People living in Detroit who have been identified as very frequent users of the ED with no PCP and one of seven chronic conditions—(1) diabetes, (2) asthma, (3) hypertension, (4) congestive heart failure, (5) depression, (6) COPD, and (7) HIV/AIDS
Theory of change/theory of action	The awardee focuses on changing participants' behaviors by offering participants seeking ED treatment with the option receive immediate access to primary care at a Gateway center. This improved access to primary care will, in turn, result in better health outcomes, fewer ED visits, and lower costs.
Payment model	Capitated payment, shared savings, fee-for-service (FFS)
Award amount	\$9,987,542
Launch date ^a	January 20, 2015
Setting	Gateway centers located at or adjacent to three of Detroit's largest EDs
Market area	Urban
Market location	Detroit, Michigan
Core outcomes	Increase PCMH use, decrease ED use and service costs, and improve overall health among target patients

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by the Detroit Medical Center to the implementation and monitoring contractor that cover the first year of the award (September 2014 to August 2015), and (3) data gathered during our initial telephone discussions with the awardee and our site visit to Gateway centers from October 26 to 28, 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed Detroit Medical Center executives, Gateway program leaders and staff, ED chiefs, Gateway clinical providers and frontline staff, and other program stakeholders, including the Gateway advisory board. A two-person team conducted the interviews by following semi-structured protocols. After obtaining consent from interviewees, we audio recorded and transcribed all interviews. A team member received training in coding, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using the extracts and information from the document review as needed, the evaluation team synthesized the material into this report on the Detroit Medical Center's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Staff perceive Gateway as providing patients with increased access to primary care.

"I have been pleasantly surprised by the reaction from patients. A lot of them are saying [Gateway] is a great program. I think it is something that a lot of patients were looking for, but did not have access to. It is nice that [Gateway] is available because they really do need primary care."

— Gateway clinical provider

Although it is too soon to tell whether the program has decreased unnecessary ED visits, Gateway leaders and staff feel that the work of the multidisciplinary care team of clinical providers and frontline staff is making a difference in people's lives. Gateway patients have also provided positive feedback, expressing their appreciation for the types of services and quality of care that they have received.

The Gateway program had enrolled 728 patients as of October 28, 2015. Patients have responded to the program enthusiastically, and very few patients have refused to enroll in the program. Even though patient enrollment has been steadily increasing, program leaders expressed concern about meeting the enrollment target of 16,130 patients by the end of the award. The Detroit Medical Center successfully recruited some patients to the program through the third path of enrollment, which involved calling the individuals on the list of about 1,000 potential PCMH patients. Nevertheless, program enrollment may still lag behind targeted numbers because most patients need to present themselves in the ED in order to be recruited into

the program. In addition, some ED staff are more consistent than others in screening patients for Gateway services.

A major success of the Gateway program is its relatively fast ramp-up period. All Gateway centers were fully operational and staffed as of August 2015. In addition, the awardee achieved its goal of starting enrollment within the first two to six months of when it was notified about receiving the cooperative agreement. It is possible that this achievement was brought about by the intense ramp-up training plan that was devised specifically for the Gateway clinical teams, for both existing staff and new hires. Despite the challenges related to recruiting staff and obtaining physical space for the Gateway centers, the Detroit Medical Center implemented the program within the original timeline.

The Gateway leadership team has implemented the program without any major programmatic changes, although the team did alter one detail of the program design. It originally envisioned opening four clinics: one at SHG, one at CHM, and two at DRH. The program did, in fact, open in all four clinics, but it has since consolidated the two clinics at DRH, offering expanded hours of operation.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

The two components of the Gateway program—the PCMH, and education and training—are closely linked. Although we distinguish between the two components for evaluation purposes, the program staff considers them a unit.

a. Primary component: PCMH

Facilitators of the Gateway PCMH implementation process include easy identification of eligible patients, strong multidisciplinary care teams, and buy-in from key Detroit Medical Center leaders.

- **Easy identification of patients.** The Detroit Medical Center’s ability to easily identify patients in the EMR system made it possible for enrollment to begin in the early stages of implementation. The awardee uses FirstNet, which is an emergency information system that stores patients’ electronic emergency records and allows Detroit Medical Center staff to monitor patients on an interactive tracking board throughout their ED visit. Gateway program leaders enlisted the help of the Detroit Medical Center’s information technology (IT) department to tag all patients who meet the eligibility criteria as “Potential Gateway” in FirstNet. Similarly, patients participating in other programs, who should not be recruited into Gateway, are also clearly tagged. For example, patients aligned with a Pioneer accountable care organization (ACO) are tagged for the ACO, not for Gateway, as these patients do not qualify for Gateway because they have a PCP through their ACO. Streamlining the identification of eligible patients in FirstNet expedited the Gateway PCMH

implementation process by jump-starting enrollment, thus allowing patients in the PCMH to be treated very early on.

- **Multidisciplinary care teams.** Gateway’s multidisciplinary care teams that staff each center have been a strong, positive influence on implementation. Program leaders hired Gateway staff who are dedicated to the PCMH model and able to work well with vulnerable populations in Detroit. Many Gateway staff members were completely new to the Detroit Medical Center, but several others had been affiliated with it. For example, one care provider had worked as a pediatric ED nurse at the Detroit Medical Center for over 12 years before the program hired her for Gateway. Another new hire had managed a Detroit Medical Center primary care clinic for 17 years. The staff at each Gateway center smoothed implementation of the PCMH by creating strong multidisciplinary care teams that combine relevant experience, needed skills, and valuable connections to the range of Detroit Medical Center resources, ensuring the proper treatment of patients facing high disease burden.
- **Buy-in from leaders.** The Detroit Medical Center has a long-standing commitment to treating individuals most in need of care, and hospital leaders view the Gateway program as a way to extend that commitment. The executive leaders across the four hospitals, many of whom serve on the program’s advisory board, endorsed the program. These individuals have provided ongoing support and internal resources, such as clinic space, to expedite program implementation. In addition, ED chiefs championed the program by emphasizing the importance of primary care in preventing ED overutilization, paving the way for acceptance among ED physicians.

Challenges posed by the Gateway PCMH implementation process include some initial difficulty in staffing the Gateway centers, concerns about potential EMTALA violations, and external factors that could impede enrollment.

- **Staffing.** Given the extended hours of evening and weekend operations as well as the time-limited HCIA R2 funding, program leaders experienced difficulty in recruiting physicians to staff the Gateway centers. The leaders initially envisioned that a physician acting as a PCP would lead the Gateway care teams. However, given the difficulty of physician recruitment, the program hired nurse practitioners (NPs) instead. The NPs act as the PCPs for the Gateway program, albeit under the medical supervision of the Detroit Medical Center physicians. The staffing strategy ultimately succeeded; the program has fully staffed all three Gateway centers.
- **EMTALA violations.** EMTALA, also known as the “patient anti-dumping law,” is a federal statute that requires ED clinical staff to stabilize and treat all patients with emergency medical conditions before transferring them elsewhere. Hospital leaders became concerned that patients experiencing a true medical emergency might be inappropriately referred to a Gateway center, which would violate the Emergency Medical Treatment and Active Labor Act (EMTALA). These leaders worked with their in-house legal team and the CMS legal team to conduct an in-depth analysis to determine whether the program would comply with EMTALA. As a solution, the leaders developed a protocol—approved by CMS—for a

medical screening examination to be conducted by a triage nurse on all patients presenting in the ED. The nurse performs a proper assessment of acuity, thereby preventing the possibly illegal transfer of high-acuity patients to a Gateway center. In addition, the leadership team's concerns were mitigated after CMS completed a review of a potential EMTALA violation at the Detroit Medical Center in the first quarter of 2015. That review was not related to the Gateway program, but CMS found that both the medical staff's bylaws and the ED triage processes, which include the MSE used in the Gateway program, are compliant with EMTALA.

- CMS found that both the bylaws that govern the medical staff and the emergency department (ED) triage processes, which include the medical screening examination used in the Gateway program, are compliant with EMTALA.
- **Enrollment.** Though steadily increasing, enrollment continues to be an ongoing challenge because most patients need to deliberately present themselves in the ED in order to be recruited into the program. In addition, there is variation in how successfully the ED staff identify patients when they appear in the ED because some staff are more consistent than others in screening patients for Gateway services. Gateway program leaders will need to devise strategies for addressing these challenges.

b. Secondary component: education and training

- **Gateway will provide consulting and support services to PCPs practicing in the community (including those at Gateway centers) in order to extend primary care services to a broader population in Detroit.** The awardee is devising a marketing campaign and community outreach in order to make PCPs aware of the consulting and support services. Through these services, program leaders expect that the Gateway centers will become certified PCMHs by the end of the cooperative agreement. Although the educational modules for PCPs are still under development, both existing staff and new hires at the Gateway centers received extensive education and training in the initial phase of implementation.
- The Detroit Medical Center's vice president and assistant vice president of academic affairs substantially facilitated implementation by helping to develop education and training materials. Some of support included a three-day in-person training delivered by the Practice Transformation Institute (PTI) that focused on the holistic approach to care, motivational interviewing techniques, shadowing care providers at other clinics, insurance enrollment counseling, and a training session on obtaining IRB consent for participation in a study. According to the Gateway care team members we interviewed, the education and training were informative.

3. How does the awardee make decisions about program-related changes?

Gateway program leaders monitor implementation and outcomes through regular communication, medical utilization reviews, advisory board meetings, and data collection and review.

- Regular communication.** Daily huddles at each Gateway center allow the care teams to discuss challenges, troubleshoot solutions, and identify next steps. During our interviews, Gateway staff reported that the huddles are helpful because they allow for the free flow of information, which can help each care team member to treat patients more effectively. Each care team and Gateway program leaders also participate in quarterly staff meetings that often include the program’s principal investigator and two medical directors. The meetings give the program staff an opportunity to discuss operations at each Gateway center together. In addition, program leaders encourage Gateway staff in the three sites to communicate openly with one another by telephone or email. During our interviews, some staff reported that they routinely turn to their counterparts at other Gateway centers for advice and mentoring.
- Medical utilization reviews.** Every month, the Gateway program’s principal investigator, two medical directors, and mid-level providers engage in a utilization review process. The reviews continue the clinical education of the Gateway PCPs by having them engage in case studies. At the same time, the mid-level providers learn how to handle complex medical cases, thus enhancing their decision-making capabilities.
- Advisory board meetings.** The Gateway advisory board, which consists of key Detroit Medical Center administrative champions, physicians, nurses, hospital presidents, and community partners, meets regularly to share updates on program implementation and operations, identify program challenges and opportunities, and devise strategies to improve outcomes. The advisory board often vets important decisions regarding Gateway as part of a collaborative decision-making process.
- Data collection and review.** Gateway program leaders hired a data analyst to oversee the data mining aspects of the project. The data analyst facilitated the development of “condition-based” family visit planners that are important to clinical documentation, multidisciplinary team workflow, and quality data registry. He closely monitors information such as patient enrollment and appointment counts. Gateway will administer a Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey to assess patient satisfaction. Program leaders will use the data metrics and survey results to guide future decision making related to Gateway.

“[Gateway] has been a great program. Getting [patients] . . . to be conscious of their health [and] have a . . . place to go to with their illness as opposed to going to the emergency department . . . is a good model. If they go to the regular primary care clinic, they are overlooked. But at a PCMH, I have a [multidisciplinary] team on hand. That’s a very good model for patient well-being.”

— Gateway program leader

4. To what extent has the awardee begun to plan for or implement payment reforms?

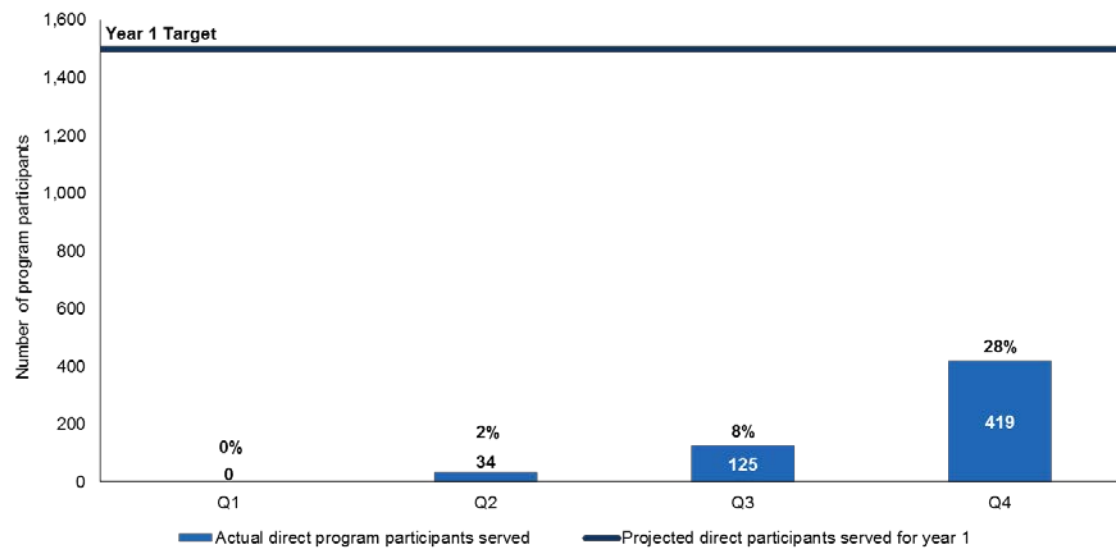
Though it has not yet fully developed a payment model, the Detroit Medical Center expects that that model will support FFS Medicaid and Medicare beneficiaries and those eligible for managed care plans under the Medicaid expansion. The awardee had originally planned to develop a PCMH-FFS hybrid (that is, an enhanced rate for the encounter) and an ACO payment

model (receiving a share of savings for all services for patients “aligned” to the Gateway centers). Under such an approach, Gateway centers would receive normal FFS payments plus a share of savings calculated from patients’ baseline total cost of care, contingent on meeting quality performance measures. The awardee had also proposed that 50 percent of cost savings (to CMS for Medicare patients and to the state Medicaid program for Medicaid patients) would be returned to the Gateway centers to cover the cost of expanded services. The Detroit Medical Center expects these savings to largely reflect the reduced use of EDs. The director of the state Medicaid program has visited the Gateway program, so program leaders are optimistic that this approach will work, but they have not yet developed a specific model.

In the meantime, Medicaid expansion under the Affordable Care Act has led to an increase in the number of Medicaid patients participating in Medicaid managed care. Gateway providers are eligible for a number of these managed care plans, although the program accepts only patients who indicate that they do not have a relationship with another PCP. At present, Gateway centers offer care for managed care patients under traditional plan reimbursements. However, the Gateway team is holding discussions with representatives from Medicaid managed care plans to show them which of their patients seem to respond well to the Gateway model. Harbor Health, one plan owned by the Detroit Medical Center and managed by its ACO, asked the Gateway program leaders to take a panel of patients. Harbor Health is one of eight Medicaid managed care plans in Wayne County. In 2014, it added a CHIP managed care plan and is working with other plans to assign patients to Gateway.

Based on its experience with the ACO, the Detroit Medical Center envisions a value-based risk-based model, and program leaders are building an infrastructure that will, ideally, serve panels of patients within existing Medicaid managed care plans with reimbursement incentives to take super-utilizers. Examples of the infrastructure for such panels would include linked primary care and behavioral services, strategies like a data system that provides real-time notification when Gateway patients show up in an ED, and utilization management. Program leaders are currently working to improve their ability to document cost savings but have not yet focused on pulling financial data while they work on increasing enrollment.

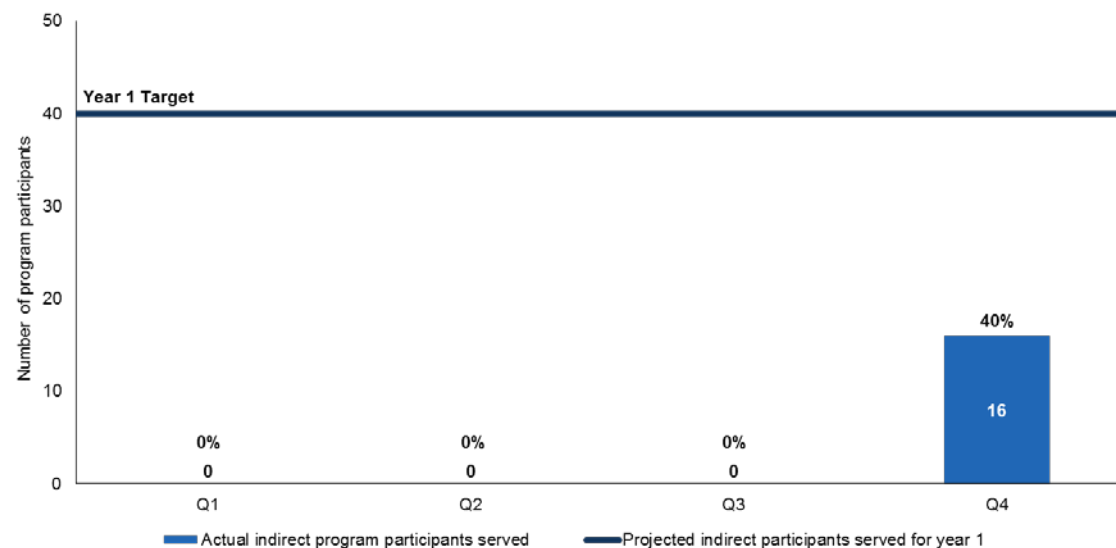
Figure 1a. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter.

Figure 1b. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter.

D. Impact evaluability assessment

Based on our evaluability assessment, we have concluded that a rigorous difference-in-differences design is feasible and is the best approach for assessing the impact of the Gateway program. Under this approach, we will measure the outcomes of the targeted population of patients before and after they were enrolled in the Gateway program. Although the awardee's key outcome is a reduction in ED visits and costs, other important outcomes are associated with the total patient costs to a PCMH, hospitalization rates, and quality measures such as ED and hospitalization rates for ambulatory care sensitive conditions. We will conduct an intent-to-treat analysis, which means that the population will include patients who agreed to participate in the program and those who did not. We will compare the before-and-after differences in the treatment group with the before-and-after differences in a matched comparison group of patients who are frequent users of other EDs in Detroit EDs and who meet other treatment group criteria. This approach will isolate the program impact from any constant differences between the treatment and comparison groups that remain after matching. Depending on the awardee's ability to recruit enough patients in a timely fashion, the design should be able to reliably detect differences in impacts on many of the key outcomes envisioned by the awardee.

E. Next steps

We look forward to continuing to work with the Detroit Medical Center for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015, as well as any issues that have emerged since the site visit. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

As mentioned, we have concluded that an impact evaluation is feasible and that a rigorous, claims-based, difference-in-differences design can be implemented. We will conduct an intent-to-treat evaluation in which the treatment group consists of eligible patients who enrolled or refused enrollment in the Gateway program. We will draw comparison group members from other individuals who use an ED frequently and who live in urban areas of concentrated poverty in Michigan. Although we will match treatment and comparison group members on the number of ED visits and other variables, we do not have information on which members of the comparison group have a regular PCP and would therefore be ineligible for the Gateway program. We will attempt to devise claims data algorithms—using observations on eligible and

ineligible Detroit Medical Center patients—to assess the likelihood that patients have a PCP. A key point that we are not sure of is what the Gateway enrollment will be. Our power calculations suggested that there would be adequate power to detect impacts on all outcomes if enrollment was close to the originally envisioned 16,000, but under lower, more pessimistic assumptions about the size of the treatment sample, the power to detect impacts would be adequate for only some outcomes.

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APPENDIX B.14

FUND FOR PUBLIC HEALTH IN NEW YORK

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REPORT

APPENDIX B.14

HCIA Round Two Evaluation: Fund for Public Health in New York

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 7, 2015)

Successes

- The New York City Department of Health and Mental Hygiene (DOHMH) engaged clinical partners with expertise in hepatitis C virus (HCV) treatment and in treating large numbers of HCV-positive patients.
- Partnering health systems effectively integrated non-clinical staff into participating clinics' diverse staffing structures and workflows.
- Partnering health systems mobilized telemedicine to increase the capacity of providers to treat HCV effectively.

Challenges and strategies to address them

- Recruiting non-clinical staff took longer than anticipated, pushing health systems to try and catch up on enrollment.
- Health promotion materials were too complex and inappropriately worded for the target population, leading DOHMH to bring in a health literacy expert to guide revisions.

Lessons learned

- Organizations developing health initiatives that entail the use of partner organizations and non-clinical staff should allocate more time for program start-up, including contracting and recruiting staff.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 7, 2016. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor. Hepatologists and infectious disease specialists typically treat HCV; many primary care and other providers do not have the knowledge and skills to manage the virus. DOHMH hopes to increase the capacity of providers to treat HCV by facilitating training and the exchange of information among hepatologists, liver specialists, and program providers through telemedicine, a process DOHMH refers to as "tele-mentoring."

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Project INSPIRE program, which is being implemented by the Fund for Public Health in New York.¹ In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the Fund for Public Health in New York's Project INSPIRE program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This report presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to the New York City Department of Health and Mental Hygiene (DOHMH), the organization responsible for developing and implementing Project INSPIRE; and a review of the reports that the Fund for Public Health in New York submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Project INSPIRE, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

¹ The Fund for Public Health in New York is the formal recipient of HCIA R2 funding, but it is a nonprofit funding entity formed by and serving DOHMH that does not play a direct role in the implementation of Project INSPIRE.

3. How do the implementing sites make decisions about program-related changes?
4. To what extent have the implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of our impact evaluability assessment for Project INSPIRE and identify next steps in our evaluation.

A. Introduction

DOHMH seeks to improve treatment for HCV using care coordination, integrated care, and telemedicine. DOHMH guides the activities of two health systems responsible for implementing Project INSPIRE—Mount Sinai Hospital and Montefiore Medical Center—by developing protocols to guide care coordination and health promotion services and by managing data collection, program improvement, and evaluation activities. Each health system implements Project INSPIRE using a care team whose members perform five roles, as shown in Table 1.

Table 1. Fund for Public Health in New York: Project INSPIRE health system care team

Role	Description
Medical director	Lead physician responsible for overseeing Project INSPIRE and advocating for the project within each health system
Program coordinator	Masters-trained staff responsible for coordinating day-to-day operations and managing non-clinical staff
Physician champions	Clinicians who (1) facilitate patient identification; (2) provide and monitor medical care; and (3) participate in training and case conferencing via telemedicine, a process the awardee calls “tele-mentoring”
Care coordinators	Non-clinical, bachelor's-level staff responsible for (1) enrolling and assessing patients; (2) helping patients access treatment by negotiating with payers to have the insurer pay HCV medication costs, a process known as prior authorization; (3) linking patients to clinical and non-clinical services; (4) facilitating communication between medical providers; and (5) offering health coaching and adherence support
Peer navigators	Non-clinical staff (who frequently have personal experience with HCV treatment and comorbidities) who support care coordinators by delivering health promotion services and helping to ensure that patients attend medical appointments

DOHMH anticipates that Project INSPIRE will result in a sustained viral response, or HCV cure, among 90 percent of noncirrhotic participants and 50 percent of cirrhotic participants. By addressing the underlying health problems that commonly interfere with adherence to treatment, including mental health and substance abuse issues, DOHMH hopes to achieve high patient satisfaction among 80 percent of participants and to reduce the number of new episodes of acute care. Project INSPIRE plans to reduce Medicare and Medicaid costs, as indicated by total expenditures, hospitalizations, hospital readmissions, and emergency department (ED) visits, in three ways: (1) by preventing HCV infection from advancing to hepatocellular carcinoma or

other forms of liver disease; (2) by stabilizing and managing patients during the program; (3) by improving patients' self-sufficiency by facilitating the treatment and management of comorbid conditions, such as HIV, substance abuse disorders, mental health disorders, diabetes, and heart disease; and (4) by preventing repeated treatment for HCV by avoiding treatment failures and reinfections. Other key characteristics of Project INSPIRE are presented in Table 2.

Table 2. Fund for Public Health in New York: Project INSPIRE characteristics at a glance

Program characteristic	Description
Purpose	DOHMH intends to facilitate HCV treatment by improving clinical and non-clinical care for both HCV and comorbid conditions and increasing the capacity of health care providers to effectively treat HCV using tele-mentoring.
Components	<ul style="list-style-type: none"> • Care coordination (primary) • Integrated care (primary) • Telemedicine (primary)
Target population	HCV-positive individuals born between 1945 and 1965 who reside in the Bronx or in East or Central Harlem in New York City; other adults age 18 and older who live in the five boroughs of New York City may also participate, although they are not being actively recruited
Theory of change/theory of action	<ul style="list-style-type: none"> • Improve HCV cure rates by increasing access to treatment, offering care coordination and health promotion services, and addressing comorbid conditions that can interfere with HCV treatment • Improve patient satisfaction using a patient-centered service model • Reduce expenses by reducing the need for costly health interventions associated with complications of HCV or comorbid conditions
Payment model	Bundled payment, value-based purchasing Development and testing of a payment model in collaboration with payer partners Healthfirst and VNSNY CHOICE, with a performance-based bundled care approach likely
Award amount	\$9,948,459
Launch date ^a	January 15, 2015
Setting	Health systems: Mt. Sinai and Montefiore
Market area	Urban
Market location	New York City
Core outcomes	<ul style="list-style-type: none"> • Sustained viral response (SVR) or HCV cure rate • Patient satisfaction • Episodes of acute care for behavioral conditions

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by DOHMH to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to DOHMH (October 5 to 7, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

We visited DOHMH and its clinical partners—Mt. Sinai and Montefiore—between October 5 and 7, 2015. We conducted four interviews with DOHMH employees to better understand project administration, monitoring and evaluation, and payment model development. We also met with a payer partner by phone. We then visited each implementing health system (Mt. Sinai and Montefiore) and strategically interviewed 13 staff in different care team positions and with different clinical experience (see Table 3). We selected these staff for interviews because telephone interviews and a review of narrative progress reports conducted before our visit led us to expect variation in care team members' capacity to recruit and treat patients according to clinic and medical specialty. Following the in-person visit, we virtually attended one tele-mentoring session per health system to learn how these sessions augment provider training.

Table 3. Role of interviewees in DOHMH's partner health systems

Role of individuals interviewed:	Mt. Sinai	Montefiore
Primary care physician	X	X
Specialty physician	X	X
Liver specialist	X	X
Behavioral health specialist	X	
Care coordinator	X	X
Peer navigator	X	
Program leader	X	X

Note: Some interviewees had multiple roles.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts describing the implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as needed, the evaluation team synthesized the material into this report on DOHMH's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Program staff at DOHMH, Mt. Sinai, and Montefiore have largely implemented Project INSPIRE according to plan. Partnering organizations agreed to participate in the innovation at the grant-writing stage and began contract negotiations with the Fund for Public Health in New York and DOHMH at the start of the cooperative agreement. The contracting period took longer than originally anticipated due to extended legal negotiations between the partnering organizations. (Interviewees were not intimately familiar with these negotiations and described them as outside the project team’s control.)

The physicians responsible for leading Project INSPIRE at Mt. Sinai and Montefiore are experts in the treatment of HCV and liver disease.

“What we in particular looked for was past experience that would kind of make the care coordination team that we were trying to really build, a care coordination team in which a lot of the staff had prior experience with care coordination. And I think it has really served us well because even though they may have been doing case managing or care coordination around a different disease or in a different setting it was kind of . . . it made, I think, an easier transition [than] if we hadn’t brought somebody on with valuable expertise.”

— *Participating physician*

DOHMH requested that the physicians become involved in the project as a result of their knowledge regarding HCV care. Site visit interviewees indicated that the reputations of the participating doctors and their influence within the health systems likely helped secure buy-in for Project INSPIRE among other providers and health system leaders. At both Mt. Sinai and Montefiore, lead physicians recruited a diverse set of clinics that they identified as having a high proportion of untreated HCV patients with Medicaid or Medicare coverage. Clinics vary with respect to their experience in treating HCV and in their

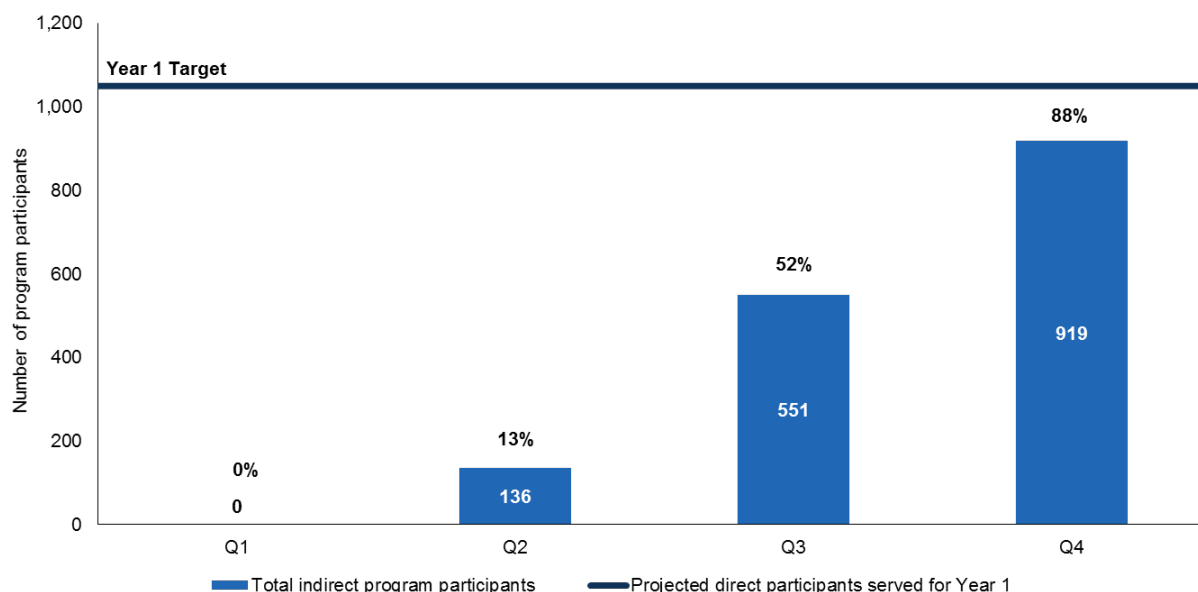
clinical focus. For example, some clinics focus on primary care; others focus on infectious disease, HIV, or hepatology.

Whereas program staff describe clinician recruitment as a relatively smooth process, hiring non-clinical care coordinators and peer navigators for Project INSPIRE took longer than anticipated within each of the participating health systems. Each health system had high expectations and a clear vision for what it wanted in non-clinical staff, and ideal candidates were sometimes difficult to identify. Interviewees suggested that strong demand in New York for care coordinators and peer navigators made identifying and hiring suitable candidates for the innovation more difficult. Each health system also encountered barriers in recruitment of selected staff, as peer navigators often have criminal histories, a history of substance abuse, or low levels of education. Confronted with hiring delays, both health systems opted to wait for the right candidates in lieu of recruiting and training less desirable staff more quickly. By the time of our site visit, the health systems had hired the necessary staff and were striving to catch up on enrollment.

Project INSPIRE enrolled 88 percent of the patients it hoped to reach in Year 1, according to the quarter 4 progress report (see Figure 1). The site visits and progress reports

indicated that delays in establishing contracts with partnering organizations and in hiring staff resulted in enrollment numbers that were lower than expected early in the implementation period. In addition to these challenges, obtaining institutional review board (IRB) approval took longer than expected at Mt. Sinai because the IRB did not grant an exemption from full review as the IRBs at other partner organizations did. There was also a reduction in total patient flow at Montefiore while staff transitioned to a new electronic medical record (EMR) system during the third program quarter.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. DOHMH does not have indirect program participants.

Staff embedded in each health system reported few barriers to enrollment at the time of our site visit and identified several factors that facilitated enrollment despite the slow start. Both health systems had queues of HCV-positive people eligible for the program but not in treatment, often because they were diagnosed long ago when HCV treatment was much less tolerable and effective than the treatment options introduced in 2013. Frontline staff reported that patients generally express enthusiasm for treatment when they hear about new medications. The addition of HCV testing prompts to Montefiore's EMR system and non-clinicians' reviews of patient medical records before each clinical rotation help the innovation team identify people for possible enrollment.

Following enrollment, partnering health systems described patient engagement during the prior authorization process as an obstacle to implementation. Because negotiating payer approval for treatment can take several months (six months in the most extreme case we heard about), patients sometimes become frustrated after they agree to take part in Project INSPIRE and then must wait to receive services. Interviewees explained that because HCV medications are expensive, insurers are selective about the types of patients they will approve for treatment. The clinical teams at each site spend a great deal of time requesting treatment for their patients, providing clinical results to demonstrate that treatment is warranted, and appealing insurers' decisions not to treat, especially when patients have comorbid conditions.

DOHMH also faced challenges in carrying out self-evaluation activities. The external evaluator, Cornell University, did not fulfill the terms of its contract, which required that it conduct a fidelity analysis during Year 1. It is unclear to DOHMH staff why the fidelity analysis did not take place as anticipated. The DOHMH analysis of project data led the agency to believe that some elements of Project INSPIRE—particularly health promotion—may not have been executed in each health system as originally intended. However, without the data from Cornell, DOHMH cannot determine how much each health system is deviating from project protocols. In response to the incomplete evaluation activities, DOHMH elected to expand its internal monitoring and self-evaluation capacity.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

Two of the three primary components of Project INSPIRE—care coordination and care integration—are closely linked. Although we distinguish between these two components for evaluation purposes, the program staff consider them part of an integrated program. As a result, the key program facilitators and barriers that we discuss below often affect both components.

a. Primary component: care coordination²

Guided by the Care Coordination Protocol and Health Promotion Manual, which DOHMH developed for the program,³ care coordinators assigned to participating clinical sites organize clinical and non-clinical care and facilitate communication among providers. Specific services include setting up and reminding participants about medical appointments, offering coaching and services that promote the health of participants, establishing linkages to clinical and non-clinical providers, completing insurance authorizations and related paperwork, and providing other forms of social and instrumental support that help participants adhere to treatment. Peer navigators

² To be consistent with DOHMH's approach, we use the term "care coordination" to refer to a set of patient services that includes care coordination as typically defined (that is, linking different types of service providers), as well as services often identified as peer navigation (that is, guiding patients through the health care system).

³ The Care Coordination Protocol is based on a similar protocol that the senior project director developed for HIV treatment. The Health Promotion Manual is based on the Prevention and Access to Care and Treatment (PACT) project, a Boston-based AIDS initiative.

work beneath and in support of care coordinators. They tend to have lower levels of education but have personal experience with HCV treatment. Care coordinators and peer navigators help participants complete HCV treatment while teaching participants the skills to manage their health independently.

Staff in all roles described care coordinators as an integral part of the care team.

Several physicians explained that they had recognized a need for expanded coordination and navigation services among their patients prior to Project INSPIRE, but lacked the time to arrange or deliver this care themselves. Care coordinators have stepped into this role, assessing patient needs in consort with physicians, setting up medical and nonmedical services, facilitating communication between providers about shared patients, and following up with patients and providers as needed.

Physicians stressed that successful integration of the care coordinators would not have been possible without the flexibility to adapt coordinators' work processes to existing clinical workflows in participating clinics, which vary dramatically in clinical focus, size, layout, and patient needs. Often facilitated by shared access to EMRs and supporting technology, strong communication between providers and care coordinators helps physicians and coordinators stay informed regarding patient care.

"Each clinic has a very different structure, very different staff composition, and different ways of dividing up the same responsibilities. So in all the clinics, patients are being treated for Hepatitis C, but that doesn't necessarily mean that it was being done the same way in each setting. So then you're sort of tasked with bringing in a new set of services, a new set of employees, staff members, to interact with the existing staff and really having to figure out at each site how to do that differently... That staff has to be integrated in a way that's effective, and that complements and adds to the existing structure. So that has been, I think, a really fascinating and rich part of the project."

—Participating physician

At Montefiore, some of the care coordinators and peer navigators selected for Project INSPIRE had previously worked with participating physicians on HCV-related projects that entailed care coordination and peer navigation, including Check Hep C, an earlier DOHMH initiative. Check Hep C is a patient navigation program that aims to increase hepatitis C screening, linkage to care, and treatment in New York City. Project INSPIRE focuses on coordinating care to increase participants who complete treatment, not to increase rates of HCV screening. Staff described their responsibilities for Project INSPIRE as very similar to those associated with their previous positions and said they could draw on their experiences when seeking information or patient services. These staff described their current positions as requiring little new information or training on anything except the goals of the program.

In both health systems, the lack of dedicated space for non-clinical staff has posed one of the most significant obstacles for implementing care coordination services. Particularly at Mt. Sinai, care coordinators do not always have work spaces where they can easily engage patients in order to introduce the program, discuss sensitive issues, or enter patient data. Although staff at Montefiore have access to small offices where they can meet with patients and log in to the system EMR, the care coordinators at Mt. Sinai frequently must traverse the

sprawling medical campus and move between temporary, inconvenient spaces for meeting patients (for example, waiting rooms and exam rooms located in the backs of clinics, far from typical patient flow). Although there is no clear solution with respect to expanding space, the project team has helped minimize some of the associated problems by using communication technologies. Program leaders at Mt. Sinai set up mobile phone lines to facilitate communication among staff and between care coordinators and patients, and have purchased tablets that allow staff to enter and view patient data.

Project INSPIRE staff also identified a lack of accessibility of health promotion materials as a challenge in Year 1. DOHMH had prepared a seven-part health promotion

“And you think it’s such a basic question, but the population which we deal with, where primarily all of them did use substance[s] or are currently using substance[s], that is a very difficult question to ask. And I was a part of that position—I mean, situation—at one time, and it didn’t go as well just with the question. And our health promotion was the way it was set up. It was very accusatory, so they revamped it and made it more, you know, ‘If you are, this could happen.’ So we acknowledged that that was a problem and we saw that it’s something that we could fix. And I think we collectively got with the DOH and modified it.”

—Peer navigator

intervention to help patients effectively manage HCV and other aspects of their health. Frontline staff from both health systems indicated that patients did not respond favorably to the first health promotion curriculum. Non-clinical staff reported that the language of Project INSPIRE materials was inaccessible for many of the patients, who have low levels of health literacy, as well as potentially off-putting and accusatory when addressing sensitive issues, such as substance abuse. One peer navigator described how prescribed questions—such as, “are you using substances?”—lacked appropriate finesse. At the time of our visit, non-clinical staff were reviewing proposed revisions to the health promotion

materials. They thought that the new language and visuals would appeal to their patients.

b. Primary component: integrated care

Care coordinators and peer navigators regularly meet and email physicians to set up clinical and behavioral health services within and outside of the health system to address factors that may interfere with HCV treatment. Substance abuse, mental health problems, and HIV/AIDS are associated with HCV. The program team noted that patients and their physicians must manage comorbid conditions so that participants can comply with HCV treatment. Care teams strive to offer medical and behavioral health care on their campuses to reduce the likelihood that providers will need to refer patients out for psychosocial support and thus risk a lack of coordinated care. If patients cannot access certain services on site, peer navigators ensure that patients visit the secondary provider by reminding them about and going with them to appointments.

Staff from Mt. Sinai and Montefiore described their health systems as good places to offer integrated care, given the wide range of clinical and non-clinical support they offer on campus. Some of the participating clinics in each system already employed behavioral health staff, whereas others contracted behavioral health specialists to support Project INSPIRE on a

part-time basis. Outside of the participating clinics, care coordinators and peer navigators have on-site access to other health system resources. For instance, a care coordinator at Mt. Sinai explained that she works down the hall from social workers and Medicaid staffers, so she can walk to their offices when she needs additional resources for patients. In addition, Project INSPIRE leaders include both medical physicians and behavioral health experts; their presence enhances the capacity of the project team to address a wide array of patient health problems and encourages interdisciplinary thinking.

The original psychosocial assessment tool took too long to administer, leading each health system to pursue alternative approaches. As part of the innovation, providers planned to evaluate patients' psychosocial needs using the Psychosocial Readiness Evaluation and Preparation for Hepatitis C Treatment (PREP-C), an assessment tool developed by one of the physician champions at Mt. Sinai. However, Mt. Sinai had greater attachment to PREP-C, given that it was developed internally, and elected to use an abbreviated version of it. At Montefiore, care coordinators instead use a series of standardized psychological scales to flag patients who meet established thresholds for psychosocial intervention. Although the approaches of the two health systems are now inconsistent, care coordinators generally seem satisfied with both tools. Patients' psychosocial needs are addressed using either approach.

Interviewees reported that patients tend to withhold information about sensitive issues, such as alcohol and drug use, or provide inaccurate information to the medical team. This tendency makes HCV management more difficult because physicians cannot identify potential obstacles to treatment or accurately assess why a given treatment regimen does not realize the anticipated benefits. Staff describe care coordinators and peer navigators as helping patients feel more comfortable in admitting socially undesirable behavior. Because the non-clinical staff look like the patients they serve and may even share a history of substance abuse problems, they can relate to patients in a nonthreatening way. This helps open up communication channels between physicians and patients.

"We can really get to the place where the patient is actually being honest. Because when you see a doctor in a white coat, you feel intimidated to tell him that 'I have been drinking and I had a drink last night.' You know?"

— Peer navigator

c. Primary component: telemedicine

Hepatologists and infectious disease specialists typically treat HCV; many primary care and other providers do not have the knowledge and skills to manage the virus. DOHMH hopes to increase the capacity of providers to treat HCV by facilitating training and the exchange of information among hepatologists, liver specialists, and program providers through telemedicine, a process DOHMH refers to as "tele-mentoring."

Each health system has its own tele-mentoring program, with meetings occurring once a week. Tele-mentoring at Mt. Sinai typically entails didactic teaching sessions, with a reputable speaker addressing some component of HCV care. Attendees access the sessions using a webinar

platform. The project team archives the lectures on a publicly accessible website for use by the project team, other Mt. Sinai providers, and medical professionals outside of the health system. At Montefiore, tele-mentoring sessions began as didactic teaching and have evolved to become more focused on case conferencing. Most attendees are Project INSPIRE staff, who either call in to the meeting or meet face to face in the room where the virtual meeting is being hosted.

Physicians in both health systems described the tele-mentoring process positively.

Interviewees reported that the sessions increased the knowledge of physicians who began the project with limited experience in treating HCV. In a Montefiore session we attended, we observed that junior physicians used the platform to ask specific treatment-related questions to others on the project team and were especially likely to direct questions to specialists with the most experience in treating HCV.

At Montefiore, the tele-mentoring sessions have had the unanticipated benefit of helping providers build relationships with physicians elsewhere in the health system.

"If I had a patient who needed—had an opioid addiction—and who needed methadone, I could easily talk to the providers at [participating clinic] and say, 'Hey, I have this guy in Hep C treatment, but before I start him or in the midst of starting, he needs [a] referral for this,' I could easily make that happen. Or, here's a guy who needs an EGD, an endoscopy . . . it's easier to get him in or decide if I even need to get this guy in by talking directly to [participating physician]. So, I think in an informal way, we have this network that is available at each of those clinics that we all have our strengths and things that add to the overall program."

— *Participating physician*

Providers can use the tele-mentoring sessions and the new relationships to link patients to outside clinics or set up tests and appointments that would have been either slower or even impossible to establish through the typical bureaucracy. For instance, interviewees described how they might need a test or procedure done with little advance notice. If patients were to call for such a procedure independent of the program, they would not be able to receive services in the desired time frame. After providers built relationships with one another through the tele-mentoring process, they began contacting each other personally to set up treatment.

In the coming months, the following changes to Project INSPIRE are anticipated:

- Hiring new care coordinators and peer navigators will increase the capacity of staff to enroll and serve patients, but will also require training for new hires.
- DOHMH will finalize revisions to its health promotion materials (edited following feedback from a health literacy expert), and care coordinators and peer navigators will begin to use the new materials with patients.

3. How do the implementing sites make decisions about program-related changes?

DOHMH has a well-developed system for collecting and monitoring program data; these data inform efforts to improve the program in collaboration with frontline staff, project leaders, and outside partners. The monitoring and evaluation team built data collection and reporting procedures from practices developed during Check Hep C. Data collection procedures include the following steps:

- Care coordinators record patient data on health system–specific intake forms and then staff-specific patient tracking spreadsheets.
- Care coordinators record patient data in a network-accessible Access database, built and monitored by staff at DOHMH.
- Program coordinators in each health system review and report data before sharing with DOHMH.
- DOHMH’s monitoring and evaluation team, using SAS, processes and develops reports based on the Access data.

DOHMH’s Project INSPIRE database contains more than 200 unique data fields, including patient characteristics, intake assessment data, treatment stage, services rendered, and treatment outcomes. The monitoring and evaluation staff carefully review and compile reports on database fields for internal review and quality improvement meetings with staff from each health system.

Early in the implementation process, care coordinators regarded data collection procedures as excessively complicated and time-consuming. By the time of our site visit, staff described care coordinators as more accepting of the project’s reporting burden. The perceived burden seems to have been reduced in part by DOHMH’s trainings, which helped clarify the rationale for data collection and provided detailed reporting instructions to the care coordination staff.

DOHMH monitoring and evaluation staff share their reports during monthly calls to the care coordinators. DOHMH staff describe the calls as valuable for determining how implementation is progressing and identifying opportunities to improve it. For instance, reports revealed that care coordinators and peer navigators were not delivering health promotion at the prescribed frequency; care coordinators explained that patients were reluctant to spend time reviewing health promotion content after having been in the clinic for an extended medical appointment. DOHMH reiterated expectations for delivering the modules, which led to an increase in the number of reported services.

In addition to meetings that involve the project team, DOHMH seeks to improve Project INSPIRE through meetings of the Steering Committee and the Community Advisory Board/Hep C Task Force. The quarterly Steering Committee meetings include leaders from all partner organizations and other identified experts; this group guides the

implementation process. The quarterly Hep C Task Force meetings build on DOHMH partnerships predating Project INSPIRE and allow the team to solicit community feedback and assistance with enrolling patients.

At the time of our visit, both frontline staff and participants offered positive feedback on Project INSPIRE. Staff in all roles explained that care coordinators help patients feel

“I think that the patients that I have, they are incredibly grateful and very motivated by all of us.”

— Care coordinator

personally cared for in a way they might not otherwise feel, especially considering the size and complexity of the partnering health systems. Staff described patients as excited to receive care and unlikely to refuse participating in the project. Care coordinators and peer navigators repeatedly said

that they are proud to be part of the program and enjoy the opportunity to address multiple facets of their patients’ lives.

4. To what extent have the implementing sites begun to plan for or implement payment reforms?

DOHMH is implementing payment model reform using a three-year plan that includes reviewing possible models in Year 1, identifying one or two models for testing in Year 2, and simulating the payment model using mathematical modeling in Year 3.⁴ At the time of our visit, DOHMH envisioned that Project INSPIRE services could be supported using a performance-based bundled care model, through which providers would receive a predetermined amount for all components of HCV treatment if their patients met certain quality-of-care goals (for example, 90 percent of patients complete treatment or 90 percent achieve an HCV cure). The payments would include the cost of care coordination and tele-mentoring services, which are not currently reimbursable through public or private insurers.

Several partners play key roles in payment model development. Payer organizations Healthfirst (a nonprofit insurance company) and VNSNY CHOICE (a Medicaid HIV special needs plan)⁵ help conduct research on payment model options, run analyses to determine treatment costs, and will test the payment model on a subset of their customers. External evaluator Cornell collects data on Project INSPIRE costs (for example, start-up, hiring, staff time, printing, translation services) to serve as payment model inputs. DOHMH has hired a health economist to work with payers to identify models from the literature, run cost models using inputs from Cornell, and advise on the best model to simulate in Year 3.

At the time of our visit, payer partners and DOHMH’s health economist had conducted literature reviews exploring payment model options. Payers also conducted analyses to assess the

⁴ During the site visit, we learned that DOHMH hopes to simulate its model even though testing is not required by CMMI.

⁵ Staff at DOHMH indicated that they may pursue a partnership with a private sector payer in Year 2.

previous cost of HCV treatment for their beneficiaries, both overall and among those with comorbid mental health diagnoses.

Interviewees identified several facilitators to developing a payment model, including the following:

- The involvement of payer partners, whose experience in paying for services and negotiating with physicians helps inform payment model development; they also have experience in pursuing innovative payment options, given New York State programs such as Health Homes and the Delivery System Reform Incentive Payment Program (DISRIP), which emphasize patient choice and a shift away from fee-for-service models
- The CMS-led summer presentation on steps to develop a payment model, which DOHMH follows to guide its work
- The successful use of care coordination in treating HIV, which gives partners confidence that the Project INSPIRE model is worth sustaining

Challenges interviewees identified to developing a payment model include the following:

- Hesitation among payer partners to share proprietary data
- Difficulties in recruiting a health economist to support payment model analyses after the initial candidates took positions elsewhere

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we concluded that a rigorous impact analysis of Project INSPIRE was feasible. We will select a comparison group by identifying beneficiaries meeting the requirements to be in the demonstration (at least 18 years old with a diagnosis of HCV) who live in the same region from which the treatment group is drawn (New York City) and who are covered by Medicaid, Medicare, or both. We will use a multivariate difference-in-differences model, which tracks both treatment and comparison group outcomes in the base and performance periods to estimate program impacts. All requisite data for both the treatment and comparison groups are available, and the sample is sufficient in size to be able to identify program impacts.

E. Next steps

We look forward to continuing to work with DOHMH for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit

consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact assessment include obtaining a list of the enrolled beneficiaries from DOHMH, obtaining Medicaid data from New York State (we already have Medicare data), reviewing descriptive baseline data for the treatment and comparison groups, estimating a propensity score model, and performing propensity score matching. If there are few to no statistically significant differences between the treatment and comparison groups, we will estimate outcomes using regression models after creating our outcome and explanatory variables. We will describe our findings in future reports.

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APPENDIX B.15

FOUR SEASONS COMPASSION FOR LIFE

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REPORT

APPENDIX B.15

HCIA Round Two Evaluation: Four Seasons Compassion for Life

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–November 20, 2015)

Successes

- The awardee achieved fairly high levels of stakeholder engagement and community support for the initiative.
- Program leaders and staff believe that both the training program for staff and the education campaigns for providers and the community are effective.

Challenges and strategies to address them

- The awardee experienced slower enrollment than expected, reaching only 44 percent of the Year 1 goal for number of participants. Program leaders attributed slow enrollment to (1) delays in expanding the program to new hospitals, (2) higher rates of ineligibility for the program than predicted, and (3) difficulty recruiting providers. However, the awardee is finalizing agreements with two new implementing hospitals, which should improve the enrollment figures in upcoming quarters.
- Challenges implementing the Quality Data Collection Tool (QDACT) software limited the awardee's ability to analyze program data. Program leaders will focus on analyzing program data after QDACT is fully operational in January 2016, following new software deployment.

Lessons learned

- The community-based palliative care model requires employing people who are highly skilled and who believe in the value of these services and the mission of the organization.
- Program leaders predicted that twice as many patients would be eligible for the program than are actually eligible.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit from November 18–20, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to: (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Increasing Patient and System Value with Community-Based Palliative Care (CPC) program, which is being implemented by Four Seasons Compassion for Life. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the CPC, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a site visit to Four Seasons from November 18 to 20, 2015, and a review of reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Four Seasons' program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the impact evaluability assessment of the CPC program and identify next steps in our evaluation.

A. Introduction

Four Seasons is a nonprofit hospice and palliative care organization based in western North Carolina that received HCIA R2 funding to expand its community-based palliative care program. The CPC program enrolls Medicare fee-for-service program beneficiaries who have life-limiting illnesses (a prognosis of three years or less) and provides them a continuum of services that focus on integrating care and addressing participant needs. Through the provision of high quality, patient-centered, and integrated care, Four Seasons aims to (1) improve health outcomes; (2) reduce Medicare's total costs by reducing hospitalizations and downstream costs of participants; and (3) create a care model that is replicable to other sites, including rural communities. The awardee also seeks to change the behavior of participants and physicians by educating participants and their families, providers, and communities about palliative care. Without provider education, Four Seasons leaders believe many providers are reluctant to refer patients to palliative care due to their discomfort with discussing death, misunderstanding of palliative care services, or objection to relinquishing control of their patients to other providers.

Although hospice and palliative care share similarities, Four Seasons staff see a difference between the palliative care furnished by CPC and hospice care. Both involve interdisciplinary team-based care, focus on services that reflect patient-centered goals for care, and provide comfort care. According to program staff, palliative care differs from hospice care in terms of the patients who receive services. Medicare hospice is available to Medicare beneficiaries who have a prognosis of six months or less to live and are not receiving curative treatments. Palliative care, on the other hand, is available to any patient at any stage of illness (even if life expectancy exceeds three years), regardless of whether the patient is undergoing curative treatment.

CPC program staff enroll participants with life-limiting illnesses at any point throughout the continuum of care and tries to limit enrollment to participants in the last three years of their life. Participants must be 65 years of age or older, be enrolled in traditional Medicare, and have a life-limiting illness in order to be considered an enrollee under the HCIA R2 cooperative agreement. (However, participants ineligible for the HCIA R2 evaluation still may receive program services.) Life-limiting illness includes "any disease/disorder/condition that is known to be life-limiting or has a high chance of leading to death,"¹ usually with the prognosis of three years or less. Referrals may be initiated by the participant's primary care physician, by a hospital or other medical facility, or by participants themselves. Practice physicians received a paper screening tool developed by Four Seasons to help them identify potential participants. After enrolling eligible participants, program staff send an informational letter to participants explaining their concurrent enrollment in the HCIA R2 program. The letter does not ask for the participant's consent. Participants remain enrolled in the program until they are discharged, move to a

¹ Weissman, David E., and Diane E. Meier. "Identifying Patients in Need of Palliative Care Assessment in the Hospital Setting: A Consensus Report from the Center to Advance Palliative Care." *Journal of Palliative Medicine*, vol. 14, no.1: 17-23, 2011.

hospice, or die. Participants may be discharged if they no longer medically need the program, have met their care plan goals, or ask to be discharged.

Multidisciplinary care teams—headed by a nurse practitioner (NP) or physician’s assistant (PA) and comprising registered nurses (RN), social workers, and administrative support staff—provide patient-centered and clinical services to participants. The CPC care teams integrate inpatient and outpatient care to span all the settings through which participants with advanced illnesses transition, such as hospitals, clinics, participants’ private residences, nursing homes, and assisted living facilities. The continuum of services offered by the CPC program includes medical care focused on symptom management, quality of life, psychosocial supports, coordination with community-based resources, advance care planning, and spiritual support.

The program also emphasizes participant, family, and provider education. Participant and family education includes (1) programs for participants and their families focusing on safety, psychosocial needs, symptom management, advanced care planning, and goals of care; (2) weekly educational modules presented by clinical staff on topics such as nutrition or symptom management; (3) presentations about palliative care at community events and senior centers; and (4) individualized education with CPC NPs or PAs in participants’ homes. Four Seasons also provides education to participating partners, including monthly webinars on topics such as billing requirements, self-care, and documentation. Four Seasons staff travel to partnering hospitals, nursing homes, physician offices, and assisted living facilities to educate clinicians about palliative care, to distribute materials, and to discuss referrals. It should be noted that although Four Seasons provides education to a wide audience, indirect participant enrollment reflects only individuals who meet the eligibility criteria (65 years or older, in Medicare fee-for-service [FFS], and expected to live three years or less) and receive individualized support services from program staff. The CPC program does not enroll direct participants. Education offered to participants’ families or providers is not reflected in the indirect participant count.

The CPC program provides services across western North Carolina. In addition, the program recently added Greenville, South Carolina, to its service area. Providers who refer participants to the CPC program span 18 care settings, including hospitals, clinics, nursing homes, and assisted living facilities. The referring providers primarily serve Henderson and Buncombe counties in North Carolina; other partners serve 15 surrounding suburban and rural counties.

Palliative Care and Hospice of Catawba Valley (PCHCV) is a major implementation site participating in the CPC program. PCHCV is a hospice and palliative care organization that primarily serves the areas surrounding Hickory and Charlotte, North Carolina. Four Seasons aimed to finalize agreements by December 2015 with two additional hospitals that will implement the CPC program: (1) Mission Hospital in Asheville, North Carolina, and (2) Greenville Health Systems in Greenville, South Carolina. However, issues with the Institutional Review Board (IRB) and negotiations with hospital leadership will continue to delay enrollment at Greenville Health Systems and Mission Hospital, respectively. These collaborations with PCHCV, Mission Hospital, and Greenville Memorial Hospital will test the program’s scalability by establishing the CPC care model in different organizational and geographic settings.

Four Seasons also collaborates with the Duke Clinical Research Institute to conduct data collection, perform an internal evaluation, and develop a payment model for the CPC program. In the early 2000s, Duke used feedback from Four Seasons to develop the Quality Data Collection Tool (QDACT) for palliative care—a data collection software tool that Four Seasons uses to monitor program implementation of palliative care programs. Researchers at Duke also are currently conducting an internal evaluation of the CPC program.

Four Seasons' CPC program launched, or became operational, on September 2, 2014. The program's key characteristics are described in Table 1.

Table 1. Four Seasons: CPC characteristics at a glance

Program characteristic	Description
Purpose	The Increasing Patient and System Value with Community-Based Palliative Care (CPC) program enrolls participants with life-limiting illnesses and provides them a continuum of services, which focus on integrating care and addressing participant needs. The awardee also seeks to change the behavior of both participants and physicians by educating participants and their families, providers, and communities about palliative care.
Components	Integrated care (primary) Education and training (secondary)
Target population	Individuals over the age of 65 years who are enrolled in traditional Medicare and have a life-limiting illness (usually with a prognosis of three years or less)
Theory of change/theory of action	If a continuum of services is provided that addresses participant needs and integrates care in all the settings through which participants with advanced illnesses transition, then participant outcomes will improve and Medicare costs will be reduced. If participants, families, providers, and communities are educated on palliative care, then the behavior of both participants and physicians will change to increase use of community-based palliative care.
Payment model	Fee-for-service, per capita care management payment, bundled payment Initially, a transitional fee-for-service payment will be calibrated to break even. Once the value of care is determined, the payment model will ultimately transition into a bundled or fully capitated payment for CPC services.
Award amount	\$9,569,123
Launch date ^a	September 2, 2014
Setting	Any setting where a participant receives health care, including specialty care clinics, hospitals, long-term care facilities, hospices, primary care practices, or the participant's private residence
Market area	Rural, suburban, urban
Market location	Western North Carolina and Greenville, South Carolina
Core outcomes	<ul style="list-style-type: none"> • 10 percent reduction in hospitalizations for CPC patients • 15 percent fewer hospital deaths among CPC participants • \$25,272,000 in total savings on the cost of care for participants who receive CPC during the three-year award period

^aAfter a brief planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Four Seasons to the implementation and monitoring contractor covering the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and our site visit to Four Seasons and its partners from November 18 to 20, 2015. For our document review, we used a standardized tool to abstract key data from the application, first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we visited with Four Seasons; Duke; PCHCV; and referring providers, who were chosen based on their involvement with the program. We interviewed several types of stakeholders, including CPC program leaders, CPC administrative and clinical staff, referring providers, and the data analysis and evaluation team at Duke.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved interrater reliability on coding; and applied codes to identify program components, research questions, and concepts that described the implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative on Four Seasons' implementation experience.

C. Findings

1. How effectively has the program been implemented?

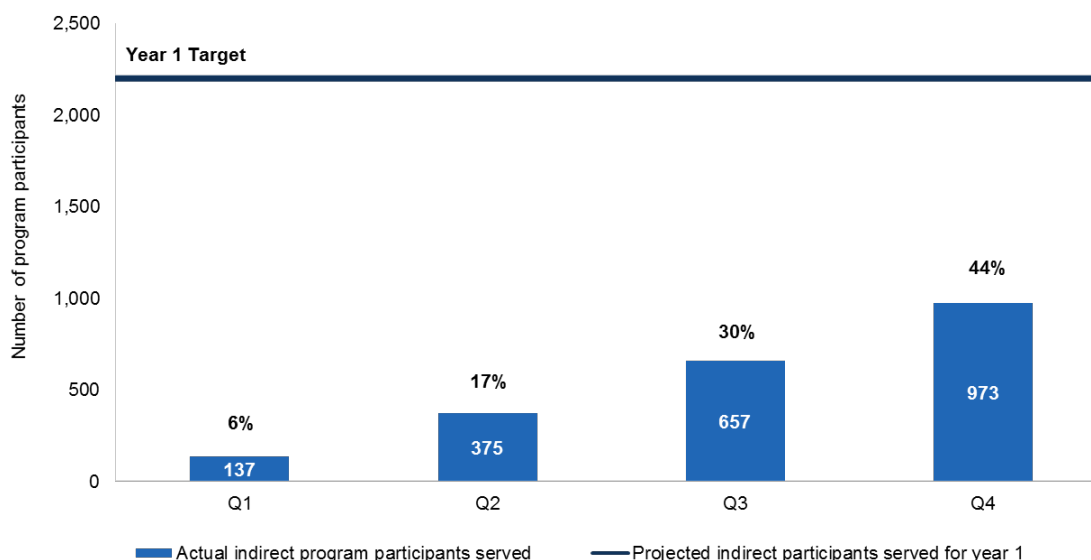
We identified three significant areas of concern regarding implementation of the CPC program: (1) the timeline for expansion to new hospital sites and updating the QDACT system, (2) the level of participant enrollment, and (3) participant caseloads for the clinical staff.

Four Seasons mostly implemented the CPC program on schedule, with two major exceptions—(1) reaching agreements with hospital implementation sites and (2) using QDACT for data collection and reporting. First, negotiating agreements with Mission Hospital and Greenville Health Systems took longer than originally anticipated. Mission Hospital's agreement had not been finalized when this report was written, and although Greenville Health Systems finalized its agreement in December 2015, enrollment will continue to be delayed until the IRB approves Greenville's participation in the program. Second, although Four Seasons used QDACT prior to implementing the CPC program, program staff did not fully realize the limitations of the software until spring 2015. Several interview respondents described how the original QDACT required a fast, reliable connection to the Internet with minimal noise or interference, which especially challenged clinical staff in rural and mountainous areas.

Program leaders also faced limited access to QDACT data reports because only one Duke staff person knew how to run the reports.

Four Seasons reached fewer than half of its enrollment target because the original program design miscalculated the percentage of eligible participants and underestimated the challenges in building partnerships and hiring staff. By the end of Year 1, Four Seasons reached 44 percent (or 973 participants) of their Year 1 (September 2014 to August 2015) enrollment target of 2,200 participants (Figure 1). One of the factors that contributed to lower enrollment was that implementing site PCHCV expected to enroll a weekly average of 20 participants, but instead enrolled between 5 and 20 participants weekly. By November 2015, PCHCV had enrolled a total of 210 participants.

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014-August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support from service providers from program launch through the fourth program quarter. CPC does not enroll direct program participants.

Another factor was that Four Seasons administrators originally anticipated that 80 percent of patients they serve would meet the eligibility criteria for the CPC program. But after program implementation, they found that only 40 percent of patients actually did. Although they did not capture data as to why potential participants were not eligible, Four Seasons leaders speculated that most patients do not qualify for the CPC program because they are not enrolled in traditional Medicare. During our site visit, one Four Seasons leader hypothesized that increased enrollment

in Medicare Advantage in western North Carolina likely decreased the number of people enrolled in traditional Medicare and therefore eligible for the program. In addition, more participants than anticipated were younger than 65 and not eligible for Medicare at all.

A third factor was the slower-than-expected process of drafting and signing participation agreements with hospital implementation sites. Four Seasons leaders expected to quickly reach agreements with Mission Hospital and Greenville Health Systems, but they waited more than a year to finalize an agreement with Greenville Health Systems and are still waiting to reach an agreement with Mission Hospital. Four Seasons leaders blamed the delay on the complexity of large clinical organizations, which created barriers in communicating with hospital leaders and obtaining approval from their legal departments.

A fourth issue was staffing shortages, particularly at PCHCV. The lack of a fully staffed care manager team slowed the enrollment process. Program leaders at PCHCV found it difficult to recruit highly skilled RNs, NPs, and PAs because of their rural location, but found clinical staff with the relevant training by the end of the first year.

The original program design overestimated the optimal caseloads for CPC providers, assumed a weeklong wait between referral and enrollment, and underestimated the time it would take to recruit needed clinical staff. First, program leaders anticipated caseloads of 300 participants per RN and 100 participants per NP or PA. By the summer of 2015, program staff and leaders agreed that the optimal caseloads were 150 to 200 participants for RNs; 80 participants for NPs and PAs in suburban and urban settings; and 60 participants for NPs and PAs in rural settings, where providers require more time to travel to participants. The lower caseloads reflect the high-touch care that clinical staff provide to participants, who generally have complex conditions and multiple comorbidities.

Second, program staff reduced the length of time participants must wait between referral and enrollment. Program leaders originally anticipated that it would take seven days to enroll a participant after the referral, but found that program staff were able to enroll participants living at home in one to two days, and participants in facilities or nursing homes within three days. Program staff prioritize enrolling participants living at home because they have fewer clinical resources than participants in a facility or nursing home. An advantage of the short enrollment process, according to one referring provider, is that it facilitates buy-in from physicians and participants in the community.

Third, both Four Seasons and PCHCV found it somewhat difficult to recruit needed clinical staff for their CPC programs. Program leaders mainly attributed the difficulty in recruiting clinical staff to the limited clinical workforce trained in palliative care, the challenge of working with patients suffering from life-limiting illnesses, and the barrier of recruiting staff to live and work in rural areas.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The primary component of the CPC program is integrated care; the secondary component is education and training. We discuss the facilitators, challenges, and strategies to address the challenges for the primary and secondary components together.

a. Facilitators

Four Seasons is respected in the community as an innovator and national leader in palliative care. Several people we interviewed commented about the vision of Four Seasons and its clinical staff—not just leading the local community in appreciating the benefits of community-based palliative care, but also working as a statewide and national leader in the movement to disseminate and broaden community-based palliative care. Four Seasons’ previous relationships with clinical and academic institutions throughout the country helped with the development of the CPC model

“Our board is willing to invest in the future. Could there be more money in the bank? Yeah. But we wouldn’t be defining what the future looks like, and at the end of the day, that’s what we exist for.”

— Program leader

“Others look to us for guidance . . . we are never going to settle for mediocrity. We’ve never reached a goal and thought, ‘that’s good enough.’ We always want to do better. . . . Our CEO encourages us to focus on the big picture. We didn’t stop at just caring for hospice patients, we surveyed the landscape and [did more] . . .”

— Program staff member

prior to the HCIA R2 award, and their respected reputation facilitates establishing new referral partnerships. Examples of products created through collaborations with the leadership’s network of resources include QDACT, an immersion course for program staff, and participant satisfaction surveys.

Many interview respondents also believed that a program champion was especially crucial for implementing changes to palliative care service delivery. “Someone has to rally the troops. Programs like these don’t make financial sense and require staff to change their workflows. There has to be a champion to push for it, or else it doesn’t happen,” one interview respondent said.

Stakeholder engagement is high because the CPC program offers value to referring providers. Referring providers are willing to participate and support the CPC program because it saves them time, by handling responsibilities that would otherwise fall on them. One referring physician we interviewed observed that the CPC program allows him to hand off difficult conversations and other burdens associated with end-of-life care to program staff, who are skilled at handling those issues. Four Seasons also developed and shared a palliative care screening tool with

“The CPC program is a critical part of my consultant options. They save me loads of time. In dealing with patients with life-limiting illnesses, we may have missing pieces, like family members, who are critical to providing input about the patient’s goals of care. They are able to do a lot of that legwork and then provide me with input and solutions to many of these issues.”

— Referring physician

physician practices to help them more efficiently identify potential participants. Another interview respondent estimated that 95 percent of physicians like the program enough to refer participants, and believed that the few providers who do not are “old-school” physicians who will never give up control of their patients.

The program’s structure also enables support for referring physicians by distributing responsibilities among RNs, social workers, chaplains, and administrative staff, leaving NPs and PAs more time to interact with participants and to manage care plans. Deploying RNs in these roles saves time because RNs take care of many clinical responsibilities originally handled by the NPs and PAs, such as processing referrals, conducting initial patient assessments, triaging phone calls, and updating participant information.

Another way that CPC delivers value to providers is by operating weekly, half-day palliative care clinics located in existing specialty clinics. CPC providers see participants in the clinic, instead of traveling to participants’ homes. The reduced travel time saves the program money because Medicare does not reimburse for the time and mileage involved in conducting home visits. The only negative comment we heard from interview respondents was that the hours of operation were too limited. Four Seasons is currently looking into opening new part-time palliative care clinics in other specialty care clinics.

PCHCV staff said that the HCIA R2 award gave them the resources to create an efficient structure for their referral process. First, the HCIA R2 award gave PCHCV money to hire additional program staff. Second, by collaborating with Four Seasons, PCHCV improved its enrollment process, allowing the CPC RN to contact patients quicker than pre-program implementation (3 days versus 8 to 10 days). Third, the data capture system that the award enabled saves the NPs and PAs time by offering them more detailed information about participants and helping identify important issues in participants’ health. “Some things were a mess before the grant, but now it is a completely different atmosphere, and the team dynamics are much better,” one PCHCV staff member said.

Internal stakeholders who participate in trainings and external stakeholders who take notice of the education campaigns find those efforts useful. The CPC program requires all program staff to attend a 40-hour immersion course. The immersion course spans numerous topics and activities including but not limited to (1) classroom lectures about palliative care, cultural competency, and other relevant topics; (2) role-playing of complex cases, in which trainees learn to navigate difficult conversations and family dynamics; (3) best practices for coding and billing; and (4) workplace leadership. Administrative staff also take the immersion course to better understand the program’s values and services so that they may better support clinical staff. All staff who attended the immersion course spoke highly of the topics and activities covered, especially lessons learned during role-playing exercises and lectures on correct billing and coding.

In addition to the immersion course, newly hired clinical staff receive one to four months of shadowing and mentoring before practicing independently. Although this training is valuable, one interview respondent stated that the mentoring and shadowing process would benefit from a more formalized structure: “Currently, no checklist of competencies exist that new [clinical] staff must master before being released to work independently.” As another means of ongoing training, clinical program staff meet monthly to discuss complex case studies to determine how best to address the cases.

Four Seasons also educates participants about the concept of palliative care and the value of the CPC program through individual conversations and at community meetings or events. Program staff we interviewed believe the education campaigns make participants more amenable to program services—noting that participants rarely turn down program services when offered. During Year 2 of program implementation, Four Seasons plans to expand community education by developing videos and podcasts for participants and their families.

b. Challenges and strategies to address them

Enrollment is substantially lower than anticipated. As discussed earlier, Four Seasons only reached 44 percent of the enrollment target for the first year of program implementation due to (1) a lower number of eligible participants than anticipated, (2) slow enrollment at PCHCV, and (3) a prolonged process to sign participation agreements with two large hospitals. The eligibility issue makes it unlikely that the CPC program will reach the established goal of 8,000 participants by the end of three years. As a solution, program leaders are considering a proposal to add Medicare Advantage participants to their eligible enrollee population. Also, PCHCV expects to enroll fewer participants than initially forecasted, and issues with the IRB and negotiating with hospital administration continue to delay enrollment at Greenville Health Systems and Mission Hospital, respectively.

The quality reporting system no longer meets the program’s needs. The computer servers for QDACT are not sufficient for the program’s needs. For example, connectivity is limited for nurses on home visits in rural or mountainous areas. The system also is not generating the reports that program leaders need to monitor progress. To overcome QDACT’s limitations, Four Seasons employed several strategies: (1) developing a paper data collection tool, (2) manually tracking participant data in Excel workbooks, and (3) collaboratively deciding with Duke to transition to another data collection and reporting software called VisionTree. However, the transition to VisionTree further delayed the availability of data reports until January 2016. Once the updated VisionTree software for QDACT is implemented, Four Seasons plans to increase data entry compliance by (1) applying Studer Leadership program principles,² (2) involving the clinical team in improving operations (rather than taking a top-down approach),

² Studer Group is a consulting firm that helps health care organizations improve clinical and financial results. See <http://www.studergroup.com>.

(3) offering 24/7 support to CPC field staff, (4) meeting one-on-one with each employee entering data, and (5) trimming the amount of data entry required.

Recruiting appropriate staff and avoiding burnout are ongoing challenges.

Both Four Seasons and PCHCV experienced difficulties hiring staff in the first year of implementation, which impeded participant enrollment. Despite a slow start, Four Seasons met 90 percent of its staffing target by the end of Year 1, with 11 newly hired, full-time employees. Everyone we interviewed agreed that program implementation could not be successful without hiring the right clinical staff. Several interview respondents noted that being located in western North Carolina, a fairly rural area with limited resources, made attracting “good talent” difficult. Both implementing sites experienced staff turnover during the first year of

“I think that’s why we more successfully [handle referrals and provide services] now. Our team dynamics are so great because all of our staff want to help somebody.”

— Program staff

implementation, and it took them a long time to find satisfactory replacements. Several interview respondents expressed that “the right staffing fit” is critical to the long-term sustainability of the program, even if slow hiring results in low enrollment during the early stages of program implementation.

Interview respondents agreed that the most well-suited palliative care staff embody the following characteristics: (1) belief in the program’s mission; (2) a wealth of knowledge of disease processes and medications; (3) the ability to communicate with a variety of stakeholders (including, participants and their families, primary care providers, and specialty providers); and (4) personality attributes such as compassion, calmness, and a comforting presence.

The subject of staff burnout came up in several of our interviews. Workforce burnout is a big challenge in the field of palliative care, in part because of the intensely emotional interactions with participants and their families. As a first step to address burnout, program leaders plan to survey program staff in Year 2 with the Maslach Burnout Inventory.³ In addition, Four Seasons and PCHCV employed a few strategies to reduce the effects of burnout, including informally surveying clinical staff about ways that administrative staff can better support them, providing free or discounted wellness screenings and services, and allowing clinical staff to work remotely either part-time or full-time.

Although referring providers generally seemed pleased with working with Four Seasons, opportunities for improvement exist. One improvement suggested was to formalize a communication protocol between clinical program staff and referring physicians in order to reassure the physicians that they will receive timely updates about their patients’ health. In addition, we observed an inconsistent application of the participant screening tool by referring providers. All interview respondents reported the tool to be valuable, although some had never

³ The Maslach Burnout Inventory is a well-known questionnaire to measure staff burnout. See <http://www.mindgarden.com/117-maslach-burnout-inventory>.

seen this tool. During our closing meeting, program leaders clarified that they only distributed the tool to physician practices, but agreed on its potential usefulness for providers across the continuum of care.

3. How do the awardee and implementing sites make decisions about program-related changes?

Program administrators make program-related changes by using feedback from program staff and other implementing sites. Four Seasons leaders, including the board of directors and the CEO, empower program administrators to make program-related changes. “Our CEO lets us try things and if we fail, we fail,” one staff person commented. Program leaders collect feedback from program staff to improve implementation. For example, one clinical staff member informally surveyed other clinical staff members to identify ways that administrative staff could better support them. The feedback encouraged program leaders to monitor employee burnout in Year 2 by conducting the Maslach Burnout Inventory.

Four Seasons made some program-related changes using program data. During the first year of program implementation, Four Seasons prioritized data collection. Unfortunately, the transition to VisionTree limited the awardee’s ability to use the data for self-monitoring, quality improvement, or other program-related changes. Despite these limitations with data reporting, the awardee was able to use enrollment data to inform some program-related changes. First, program leaders meet with clinical staff monthly to review each CPC provider’s enrollment numbers. Program leaders observed that comparing an individual provider’s total enrollees to the program average motivated clinical staff to enroll more participants. Second, the low weekly enrollment numbers of PCHCV led program leaders to identify that a staff shortage was causing a bottleneck in the enrollment process. Program leaders eliminated the bottleneck after hiring an additional RN in late fall 2015.

Four Seasons also plans to focus on collecting feedback from participants and frontline staff in the second year of implementation. The awardee plans to deploy a telephone survey on participant satisfaction in early 2016. Four Seasons staff will also survey PCHCV participants in order to reduce the burden on PCHCV staff. At the time of our site visit, program leaders faced uncertainty regarding secure and legal transmission of participant information between the two organizations, but felt certain that the barrier would soon be resolved.

Four Seasons and PCHCV communicate by phone regularly; both describe their meetings as collaborative and mutually beneficial. One key topic of discussion has been the strategies used to enhance enrollment. In addition to working with PCHCV, Four Seasons will form a readmissions task force in Year 2 with several of the program’s referring hospitals. This task force will identify opportunities for program improvements.

4. To what extent has the awardee begun to plan for payment reform?

The current Medicare FFS reimbursement for palliative care is based on a Part B clinician visit. For beneficiaries with a DSM (Diagnostic and Statistical Manual of Mental Disorders) diagnosis code, this reimbursement may include up to \$500 per month for services performed by a licensed clinical social worker. There is no reimbursement for travel to and from the participant's home, nor for providing consultation services to the participants and their families. "This is a negative margin product, so the CMMI funding is a blessing," one respondent said. Both Four Seasons and PCHCV subsidize their palliative care work through hospice revenues—although, they said hospice revenue has declined in recent years due to new payment policies.

Four Seasons plans to focus on developing the payment model in the second and third years of program implementation. The payment model will have two parts: (1) a transitional FFS payment followed by (2) a bundled, fully capitated payment approach. The awardee is considering a value-based modifier and possible risk sharing as part of the bundled payment. The transitional FFS model will be designed to enable the palliative care model to break even financially. Meanwhile, Four Seasons and Duke will calculate the precise costs of services and the reimbursement, after which they will assess the feasibility of financing the model with a bundled payment.

Four Seasons' next steps in developing the payment model revolve around collecting cost information about the services provided, a task riddled with challenges. First, the lack of electronic medical records (EMRs) compatible with palliative care delivery makes it difficult for Four Seasons to analyze the services provided, how they are provided, and which participants receive which services. Four Seasons hopes to enhance their EMR by embedding the updated QDACT system (using the new VisionTree software)—although, the extent of QDACT's reporting capabilities will not be known until January 2016. As a long-term solution to this problem, Four Seasons is currently negotiating with vendors to collaboratively build a palliative care EMR. Second, program administrators also mentioned that the palliative care field lacks validated quality measures, making it difficult to know if they are collecting useful data. Four Seasons is working with colleagues across the country to develop quality measures for palliative care (known as Measuring What Matters). This will be a six-month to eight-month process to develop 8 to 10 National Quality Forum–endorsed measures.

Duke has a significant role in developing the payment model. The Duke team brings expertise in payment policy to the initiative and will conduct propensity score matching, perform time and motion studies, and work with an expert in hospice analytics. Duke's next steps include (1) identifying a comparison group to compare cost data with program participants and (2) conducting a focus group of stakeholders in Washington, D.C., in fall 2016.

Program leaders believe they are on track to implement and test the payment model in Year 3—likely with both inpatient and outpatient cohorts. Both Four Seasons and Duke staff noted that payment is made today under Medicare Part B, but the potential savings from the payment model will be under Part A. "We need a control group with an 'uber confidence interval' so that

we have a strong counterfactual to demonstrate the value proposition,” one of the analysts said. The Duke evaluators want a test that demonstrates the highest statistical validity possible.

D. Impact evaluability assessment

There is a potential barrier to rigorous evaluation of the program developed by Four Seasons and its partner PCHCV. Enrollment into the program is based on a clinical assessment that is guided by a screening tool that identifies significant risk factors such as physical limitations, serious illnesses, social determinants, and whether the provider would be surprised if the patient died in the next year. Because it is not possible to replicate this clinical assessment for those not enrolled in the program, we cannot assure that a comparison group selected on the basis of administrative data will be a proper counterfactual for the treatment group.

Our final recommendation for a study design depends on whether we can identify study eligibility criteria that will be applied to the treatment and comparison groups. We are extracting Medicare claims for all enrollees and are constructing measures of utilization, health status, functional status, and demographic characteristics. We will assess whether the information provided in the claims for beneficiaries enrolled in the program could be used with reasonable accuracy to identify similar unenrolled beneficiaries with life-limiting illnesses.

E. Next steps

We look forward to continuing to work with Four Seasons for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

We recently received the first beneficiary-level finder file from Four Seasons. This finder file contained beneficiary identifiers for all enrollees in the first year of the program. We are extracting Medicare enrollment and claims data for these enrollees.

We will analyze Medicare data and data from the awardee to identify study eligibility criteria. That is, the researcher on the evaluation team responsible for this awardee’s impact analysis will work with two or three Mathematica researchers (who have clinical backgrounds

and knowledge of Medicare claims) to assess whether the information provided in the claims for beneficiaries enrolled in the program could be used with reasonable accuracy to identify similar unenrolled beneficiaries with life-limiting illnesses for a comparison group. In addition, because we cannot identify which potential comparison beneficiaries in the awardee's service area were considered for referral to the program, we will identify one or more geographic areas that are comparable to the awardee's service area.

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APPENDIX B.16

GEORGE WASHINGTON UNIVERSITY

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REPORT

APPENDIX B.16

HCIA Round Two Evaluation: George Washington University

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 16, 2015)

Successes

- Care partners reported that, in general, enrollees responded favorably to the program. (Care partners are paraprofessional, advanced-practice community health workers.)
- Care partners identified and enrolled participants at the Department of Motor Vehicles and at the Department of Income Maintenance, demonstrating ingenuity in the identification and recruitment of program participants.
- Prevention at Home (PAH) leaders successfully coordinated the billing process for the at-home sexually transmitted infection (STI) testing component of the PAH program.

Challenges and strategies to address them

- Because of technological delays, the PAH program has not launched its website, a major component of the innovation. Instead, care partners use paper-and-pencil forms for consent, registration, and progress notes, complemented by a Survey Monkey version of the risk assessment questionnaire.
- PAH leaders and the implementing site staff faced communication challenges related to identifying and recruiting potential participants. George Washington University staff reported that they addressed the issue by (1) facilitating joint planning meetings with implementing site staff to ensure that site staff appropriately focused their outreach efforts on individuals most likely to meet PAH criteria, (2) hosting a group discussion about the enrollment criteria and the clinical and community venues serving the target population, and (3) encouraging the implementing sites to hold recruitment events in various community venues. George Washington University staff noted that the implementing sites identified their high-priority venues and, at weekly care manager meetings, provided feedback about their efforts to expand recruitment. Care partners also took various internal steps and implemented outreach strategies to increase enrollment (for example, using electronic medical records to identify potential patients and recruiting at local venues).

Lessons learned

- Additional time for planning and program start-up would have been beneficial, in particular for the testing and launch of the website. Additional time for planning and start-up would have allowed PAH leaders to accommodate early start-up challenges. Furthermore, additional thought and conceptualization of program design, and the timelines and resources needed to succeed at this design would have been helpful.
- Inconsistent availability of Wi-Fi connections in the field may impede mobile data collection, necessitating an alternative data collection methodology.
- Ensuring that the vision for participant identification and recruitment is clear before establishing partnerships would have minimized confusion among partners and possibly facilitated stronger partner involvement and recruitment efforts.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 16, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31,

2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children’s Health Insurance Program costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee’s early implementation experiences
3. Assess the facilitators of and barriers to each awardee’s success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Prevention at Home (PAH) program, which is being implemented by George Washington University. In this document (referred to as a “narrative”), we examine this program’s first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of George Washington University’s PAH program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. In this narrative, we present findings from our analysis of qualitative data gathered through a review of the awardee’s application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to George Washington University; and a review of awardee reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of George Washington University’s PAH program, this narrative addresses four questions:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
-

3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of the impact evaluability assessment for the PAH program and identify the next steps in our evaluation.

A. Introduction

George Washington University developed the PAH program and is overseeing its implementation at eight sites within the District of Columbia. With its focus on care management, the program aims to optimize the HIV and sexually transmitted infection (STI) prevention-to-care continuum by (1) delivering point-of-care and at-home testing to participants and (2) offering them virtual counseling on sexual health behaviors through a web-based portal. The program targets individuals living in the District of Columbia who are age 18 and older and who are eligible for Medicaid, Medicare, or the DC Healthcare Alliance Program.¹ The program serves individuals diagnosed with HIV as well as high-risk individuals whose HIV and STI status is unknown. The objectives of the PAH program are to increase the number of people in the District of Columbia who are tested for HIV and STIs, to assist people with HIV in making linkages to care, to help participants achieve an undetectable viral load, and to reduce the health care costs associated with the diagnosis and treatment of HIV and STIs.

The PAH care management system is a web-based system that, when fully operational, will provide participants with a health needs assessment, education, home HIV and STI testing, interactive computer counseling, and, with help from staff called care partners, referrals to other needed services. This web-based system was not yet activated at the time of our site visit. Once activated, the PAH system will also connect to the local health information exchange, allowing hospitals, managed care organizations (MCOs), and the program's care partners to have access to each other's data and support each participant's care plan.

Key characteristics of the PAH program are summarized in Table 1. When it is fully implemented, the program will include the following activities:

- The PAH program will mail HIV and STI testing kits to participants after they enroll via the PAH website.
- PAH participants who complete the HIV or a STI test and the health needs assessment (a risk questionnaire completed prior to obtaining test results) will receive a \$20 incentive.

¹ The DC Healthcare Alliance Program is a locally funded program designed to provide medical assistance to low-income residents who are not eligible for Medicaid.

- After the HIV and STI testing is complete, the PAH website will offer participants virtual counseling on behavior change.
- Working closely with participants, PAH implementing staff will develop a shared health action plan that specifies how participants can use services effectively and stay as healthy as possible.

The program also includes care partners, who are paraprofessional, advanced-practice community health workers hired by the implementing sites. Care partners underwent a three-week training at George Washington University prior to the start of the program. Originally, these individuals were hired to play a focused role by helping participants access and negotiate the PAH website. In light of the delayed implementation of this website, care partners have come to play a more pivotal role in the program by undertaking the following activities:

- Working with site supervisors to identify, recruit, and enroll individuals in the PAH program
- Conducting outreach to potential participants at community-based sites
- Conducting HIV testing with participants at points of care in the community
- Helping to develop health action plans
- Providing face-to-face assistance, if needed

Specifically, care partners schedule and conduct outreach at (1) community and health care sites throughout the District of Columbia, (2) community health fairs, and (3) other periodically scheduled recruitment and testing events. Their supervisors assign a care partner to each participant who tests positive for HIV. Using the PAH care management system, care partners develop health action plans for participants who have a detectable viral load, have missed clinic visits or viral load testing, have visited an ED, or have been hospitalized. If needed, care partners also conduct point-of-care HIV testing and STI specimen collection for assay by a laboratory. Individual participants may request face-to-face assistance of a care partner in conducting HIV and STI testing.

George Washington University expects that the PAH program will (1) improve the coordination of care for participants who are HIV-positive, at risk of becoming HIV-positive, or at risk of contracting other STIs; (2) link participants to health care services that are appropriate for people with HIV or STIs or appropriate for people at risk for developing these infections; (3) improve the detection and reduce the incidence of HIV and other STIs; and (4) reduce HIV-related expenditures.

B. Methods

The evaluation team developed this report based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by George Washington University to the implementation

and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to PAH (October 14 to 16, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

Table 1. George Washington University: PAH characteristics at a glance

Program characteristic	Description
Purpose	A web-based care management system providing participants with a health needs assessment; education; home HIV and STI testing; interactive computer counseling; and, with help from care partners, referrals to care
Components	<ul style="list-style-type: none"> Health information technology (primary): Website with educational and counseling features and portal with data collection features Patient engagement (primary): Point-of-care and at-home testing kits for HIV and STIs Care management (primary): Assessment, development of health action plans, ongoing care management, and coordination of services with health care providers
Target population	District of Columbia residents age 18 and older who are eligible for Medicaid, Medicare, or the DC Healthcare Alliance Program and are diagnosed as HIV-positive, at risk of contracting HIV, or at risk for other STIs
Theory of change/theory of action	Participants who complete testing and virtual or face-to-face counseling and receive health action plans from care partners will realize a reduction in health care costs associated with continuation of care, a reduction in expenditures associated with ED visits and hospital admissions, and improved health outcomes.
Payment model	Payment innovations integrate billing of point-of-care and at-home HIV and STI testing at the provider level to diverse payers in order to better coordinate care and expand coverage for HIV-positive residents of the District of Columbia. Adopt payment for non-licensed personnel (for example, community health workers) conducting HIV preventive and care management services. The payers include Medicaid, the Centers for Disease Control and Prevention, the Health Resources and Services Administration's Ryan White HIV/AIDS Program, and the U.S. Department of Housing and Urban Development.
Award amount	\$23,808,617
Launch date ^a	April 28, 2015
Setting	The PAH program is being implemented in three settings: (1) hospitals, (2) federally qualified health centers (FQHCs) and look-alike clinics, and (3) community-based organizations (CBOs).
Market area	Urban
Market location	District of Columbia
Core outcomes	<ul style="list-style-type: none"> Care management (that is, development and implementation of health action plans, linkage to and retention in care, adherence to treatment, and lower hospital admissions and ER visits) Participant engagement in care (that is, self-testing at home and through point-of-care testing) Participant satisfaction Increased detection rate

^aAfter a planning period, the awardee activated its program (that is, the activities referred to as pre-PAH) as of this date.

During our site visit, we interviewed the project’s principal investigator and key program staff—including, the co-principal investigators; 10 frontline staff (that is, care partners and care partner supervisors) at several of the implementing sites; and other program stakeholders, including one health administration staff member at Providence Hospital and one health information technology (health IT) staff member at George Washington University. Implementation occurs in three organizational settings: (1) hospitals, (2) federally qualified health centers (FQHCs) and look-alike clinics, and (3) community-based organizations (CBOs). To obtain a comprehensive view of program implementation, we visited PAH staff in a variety of settings (Table 2).

Table 2. George Washington University: PAH payer and provider partners interviewed during the first site visit

Organization type	Organization name and description	Location
Hospital	Providence Hospital, a 408-bed hospital, has a medical staff of more than 500 providers and is part of the Ascension Health System, the nation’s largest Catholic nonprofit health system.	Northeast DC
FQHC	Family and Medical Counseling Service (FMCS) is a community health center that offers medical, mental health, and substance abuse services and that responds to many other psychosocial needs in areas where our clients socialize, live, and work. (See http://www.dcpca.org/family-medical-counseling-service .)	Southeast DC
FQHC look-alike	Metro Health is a nonprofit, community-based organization that provides multidisciplinary and integrated primary health care, behavioral health care, and food and nutrition services.	Northwest DC

Note: The organizations we selected were from the full list of eight partners.

A two-person team conducted the interviews in accordance with semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received coder training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts that described the implementation experiences. The team then extracted text pertaining to the research questions listed below. Using these extracts and information from the document review as needed, the evaluation team synthesized the material into this narrative on George Washington University’s implementation experience.

C. Findings

1. How effectively has the program been implemented?

Overall, as of our site visit, the program has not been fully implemented as designed. Although George Washington University lists March 1, 2015, as the launch date, the PAH program was not launched until later in the year. George Washington University launched the first phase of the program, known as pre-PAH,² on April 28, 2015. This phase was still in place

² Pre-PAH refers to the program overall not the PAH website. The launch of the PAH website had not occurred at the time of our site visit.

during our site visit in October 2015. Hence, we evaluated the pre-PAH phase for this report. Staff reported that the anticipated launch date for the PAH program was November 2015.

Pre-PAH differs from PAH with respect to two key program components, which have not yet been activated:

1. The PAH website, which will allow participants to use educational and virtual counseling features
2. Mailing kits for HIV and STI testing at home

At the time of our visit, the website was still undergoing testing, with an expected launch in late fall 2015. The PAH program was not offering the virtual counseling component and was not mailing home testing kits (HIV and STI) because the website was not yet live and available for participants' use. Care partners were providing on-site HIV tests during recruitment and enrollment, but not STI kits because the provider had just received approval from its institutional review board for using the testing kits. Care partners were scheduled to attend a training session on the use of the kits the week after our site visit.

"The website, we've been waiting for a while. Initially we were told, 'It will be ready sometime in August.' And then it was, 'It will be ready in September.' So, we've already told clients. 'Hey, you should be getting an email around this time'...it messes up my rapport with the clients because it seems like I lied to them . . . that can deter somebody from actually wanting to do the program."

—Care partner

Major changes to program design included a shift in participant identification. At the start of the program, care partners and their supervisors originally expected that they would be given a list of names of individuals to be recruited and enrolled in the PAH program. Instead, a George Washington University staff member encouraged representatives of the implementing sites to conduct outreach on local streets to reach the desired enrollment numbers. PAH leaders

"[The care partners] went into training with PAH . . . [at] GW ...and they came back and we thought they [would] know exactly what they [have] to do. But I was surprised. . . . When I said, 'All right, so now where are you going to go get these patients?' They said, 'I don't know.'"

—Care partner supervisor

reported that they quickly identified that this approach was unlikely to yield the desired enrollment numbers for individuals meeting the enrollment criteria. They met with the implementing site staff to redirect their efforts to a more targeted approach. Some implementing sites attempted provider referrals, but providers have been slow to engage with the program. As a result, referrals from providers have not yielded many participants.

In response to these various challenges, implementing sites have adjusted their strategies for identifying and recruiting individuals. PAH leaders reported that they reoriented site staff to the PAH enrollment criteria and briefed the sites regarding community and health care venues that were likely to yield high rates of enrollment. To avoid gaps or duplicative efforts with other HIV testing programs in the area, PAH leaders began working with care managers to help them

systematically identify venues that they would target for recruitment. For high-volume venues, participating sites conducted joint recruitment efforts with existing programs to enroll as many eligible individuals as possible. Various sites made somewhat different adjustments:

- Hospital care partners are working to identify individuals in local electronic medical records (EMRs) who meet the initial eligibility criteria; they are also working to obtain provider buy-in.
- One FQHC look-alike clinic reported that providers did not support “warm hand-offs” (i.e., referrals involving in-person introductions) to care partners. At the outset of the program, the providers did refer patients to the program, but this only lasted a few weeks. Care partners reported that providers did not see any benefit to the program. As a result, to recruit participants, the care partners at the clinic turned to a food bank serving HIV-positive individuals.
- The FQHC’s care partners conduct outreach and recruitment at housing sites, the Department of Motor Vehicles (DMV), other social service sites, and the center itself. These methods have proven to be more successful than attempts at provider referrals and street outreach.
- Partner clinics, like FQHCs, worked with George Washington University to determine that the care partners themselves did not have to administer HIV tests to all potential

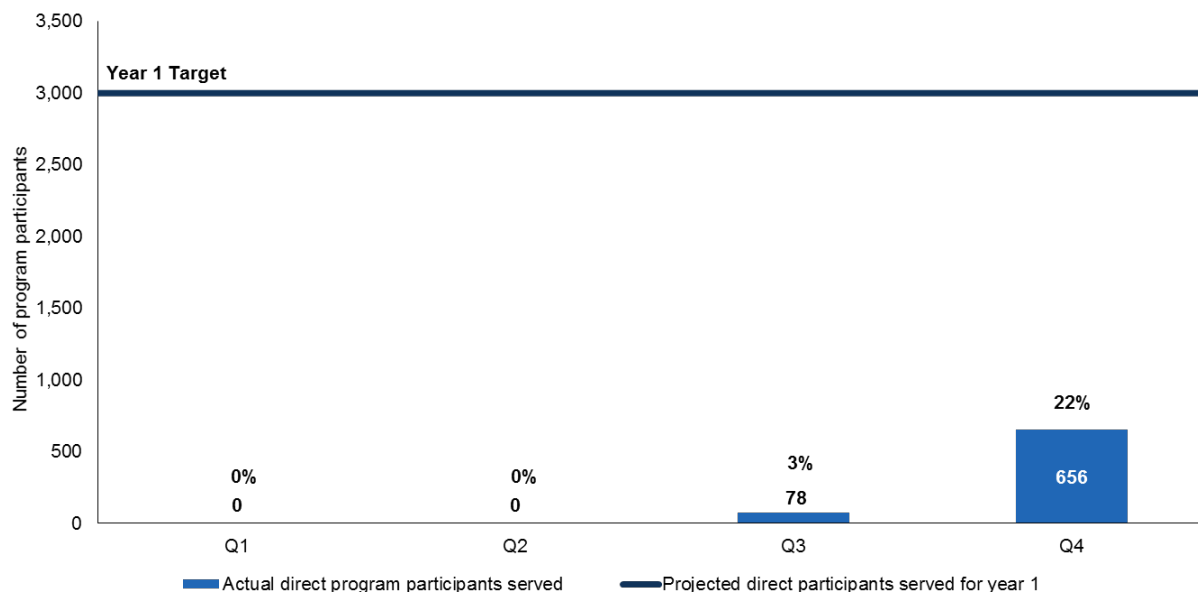
“[The care partners] went into training with PAH . . . [at] GW . . . and they came back and we thought they [would] know exactly what they [had] to do. But I was surprised. . . . When I said, ‘All right, so now where are you going to go get these patients?’ They said, ‘I don’t know.’”

— Care partner supervisor

participants; rather, individuals who previously tested positive could enroll without the test. One clinic was already conducting HIV tests at a high volume. This process saved time and allowed recruitment efforts to be targeted to individuals who had already tested positive.

Overall, the program is generally successful at reaching the types of individuals it intends to reach. However, delays in the full launch of the program and the need to change participant recruitment procedures contributed to lower-than-anticipated enrollment numbers. In addition, care partners reported rare instances of individuals who knew that they were HIV-positive but nonetheless signed up for a retest to receive the incentive. Figure 1 shows participant enrollment by program quarter, including both projected enrollment and actual enrollment.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. George Washington University does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The PAH care management and health IT components are closely linked because the health needs assessment, testing kits, and health action plans are integral parts of the mobile platform. Although we distinguish between the two components for evaluation purposes, program staff consider the components to be part of the PAH program as a whole. As a result, the major program facilitators and barriers that we discuss below affect all components.

a. Primary component: health IT

The PAH program has encountered delays with activation of the PAH patient website and corresponding PAH portal. George Washington University staff had intended for the PAH innovation to take place through the PAH website, with its tailored educational and counseling components. However, in the pre-PAH phase, PAH leaders adapted the protocols into paper-and-pencil forms. Care partners identify participants by using a paper-and-pencil screener to assess their eligibility for the PAH program. If eligible, individuals enroll in the study by signing a consent form.

Upon enrollment, care partners administer an oral HIV rapid test to the enrollee. While the enrollee awaits the test results, he or she completes a health needs assessment survey on a tablet or, when Internet access is unreliable, on paper. The PAH website provides access to the PAH portal (a private location on the Internet only accessible with a unique password). The portal provides a location for the storage of patient information. As of the site visit, the portal was not active. Care partners worked from paper copies until early October 2015. George Washington University staff then directed the partners to use Survey Monkey for the assessment survey. However, for at least several weeks prior to our site visit, care partners continued to use paper copies for the screener and consent because the portal for storing survey results and other patient information was not yet active.

At the time of our visit, the health IT staff were conducting final tests of the PAH portal and website. While staff have been waiting for the final PAH items to be ready, the paper versions of the program materials (screener, needs assessment, and so forth) have worked well, particularly when care partners encountered poor Internet access (for example, while recruiting in basements of housing developments).

The complexity of the health IT contributed to delays. The data exchange via the PAH portal, which was designed to support the development of health action plans and, ultimately, of care management activities, requires significant coordination and collaboration among all participating organizations. For example, each organization operates its own version of the same EMR platform: eClinicalworks (ECW³). Care providers enter their information into the ECW, but the system may or may not be linked to the local health information exchange (HIE)—a system that is operated by the District of Columbia’s Primary Care Association. The system connects local hospitals and ambulatory care organizations and facilitates data exchange to improve care management. Implementation of the PAH portal requires numerous business associate agreements (BAAs), which were being finalized during our site visit. Upon completing the BAAs, the PAH program will share participant data within the HIE community and allow participating providers to share information that will shape health action plans. George Washington University staff noted that they should have focused more attention on facilitating the coordination of the BAAs at the beginning of the program.

b. Primary component: patient engagement

The program’s IT platform is designed to allow individuals to engage in active management of their health by visiting the PAH website, obtaining educational information and counseling, and ordering by mail HIV and STI kits for at-home testing. As noted, the PAH website was not yet activated at the time of our site visit. Therefore, participants could not obtain educational information or counseling via the online system or order home testing kits.

³ Each organization is licensed to use the electronic health records software, eClinicalworks, which allows for integration into the District of Columbia’s health information exchange (HIE), which is governed by the DC Primary Care Association.

STI kits were not yet available for care partners' use. As for HIV, care partners either administered oral HIV rapid tests on site or arranged for the tests to be conducted elsewhere (for example, by other on-site testing programs). Johns Hopkins University (JHU) will supply the STI kits. Ultimately, George Washington University hopes that JHU will obtain approval to use participant Medicaid numbers to bill for the tests. Care partners reported that they would return shortly to George Washington University for refresher training in STI testing. In addition, care partners voiced concerns about privacy matters associated with STI testing in outreach locations. For example, one organization conducts HIV tests at the DMV behind a screen in the waiting area. However, staff could not take the vaginal and anal swabs needed to complete the STI testing without using the DMV's public restroom, potentially increasing participants' discomfort and adding to privacy concerns. Care partners are exploring options for private spaces.

Care partners conduct a risk assessment and provide HIV and STI risk education during in-person visits, but individual sessions require significant time. Care partners reported that traditional HIV testing sessions take 20 minutes; in the PAH program, care partners need 45 minutes to identify, recruit, enroll, test, assess, and educate each participant. Care partners aimed to improve their efficiency by proceeding with the risk assessment survey while waiting for the oral test results. The session can be extended even longer if the result shows that a person is HIV-positive, in which case he or she also needs a confirmatory blood test, according to the Centers for Disease Control and Prevention and the District of Columbia Department of Health policies. Care partners reported that they often physically accompanied participants to the clinic, hospital, or other health care setting (either by personal choice or at the participant's request) to emotionally support the participant through the process of taking the confirmatory test.⁴

"These are 45 minutes to an hour assessments. People are not willing to sit that long and given our experience and our history of testing, [and] we've been testing since the '90s. Testing now takes 20 minutes. Now you're asking me to do 45 minutes, now you're asking me for an assessment. . . . So, [you have] to shift your gear."

— Care partner supervisor

c. Primary component: care management (health action plans)

After the PAH program's official launch, care partners will store each participant's health action plan within the PAH online system. The PAH system also will connect to the local HIE, allowing hospitals, MCOs, and care partners to access data and contribute to each participant's care plan. As mentioned, given that George Washington University had not yet activated the PAH portal at the time of our visit, care partners were not writing and recording health action plans within the local EMR system.

⁴ All HIV clinics funded by the Department of Health and other clinics in the District of Columbia, offer "red carpet" service to ensure that an individual sees an HIV specialist within 24 hours of testing positive.

PAH staff and care partners reported some confusion about the health action plan component. For example, despite have been trained at the start of the program, one care partner supervisor was uncertain about how the health action plan would integrate into the online PAH program. In response, George Washington University scheduled a refresher training for care partners in late October.

In the coming months, George Washington University intends to take the following next steps regarding the PAH program:

"We're not wholly certain yet how we're going to infuse and cross-pollinate [the health action plans]. A lot is going to be driven by the people with GW. What data are you going to need? What's going to be important to you? We're capturing it and I actually believe it's even a moving document for them because they're looking at it saying, 'Hmm, we're getting more here, let's look at this. . . .'"

— Care partner supervisor

- Launch the PAH website and portal
- Initiate the STI testing component as part of in-person enrollment
- Initiate the health action plan and virtual counseling components
- Begin participant follow-up based on health action plans

3. How do the awardee and implementing sites make decisions about program-related changes?

Staff currently collect participant feedback on the PAH program through informal mechanisms. PAH leaders receive feedback in an unstructured manner through biweekly meetings with the care partners. (Care managers meet with PAH leaders weekly.) Care partners reported that they contributed significantly to the revision of the survey questions, making them more culturally and educationally relevant to the target audience. Further, care partners receive informal feedback through their in-person interactions with participants. For instance, participants generally complain that testing takes too long, but they appreciate the incentive. Care partners noted that participants are looking forward to the at-home testing option and to the STI testing program.

Individuals at the implementing organizations (that is, care partners and their supervisors) collect participant data and George Washington University staff analyze and disseminate the aggregate data on enrollees.

PAH leaders and care managers conduct weekly debriefings at George Washington University to address participant identification and enrollment strategies and develop outreach and recruitment techniques. For example, to fill an existing need, they created and disseminated PAH marketing materials at the organizational level. Across

"If starting all over again, knowing what I know now, I would still participate in the program...I think at the end of the day, all programs have difficulty getting their legs, getting their feet down on the ground. That's a normal part of programming..."

— Care partner supervisor

organizations, care partners interact on a monthly basis. Because the different sites in PAH and across the city initially competed over the number of participants recruited and methods used, George Washington University staff worked to promote collaboration and coordination of

recruitment efforts. For example, participating sites were encouraged to conduct joint PAH recruitment efforts in high-volume venues.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

To sustain the PAH program, George Washington University needs to move it from a grant-based system to an insurance-based system. As one care partner supervisor noted, “People should realize that grant funds are not the way to plan your future, and that’s certainly our thinking on that as well. So, the more areas we get into that . . . we can use billable activities . . . we’ll be in a better position to bring people like [the PAH care partners] on as full-time employees and not grant-funded [employees].” Specifically, the leadership is seeking ways to reimburse the new services that are part of the PAH program, such as virtual counseling and community health worker services. The university has identified several possible ways to obtain such reimbursement.

“We are well into the reimbursement game, because the thing that doesn’t give it a good impact as it should is that we have a laboratory contract with [a commercial lab] for all of our lab work. And so all these HIV tests are going through [the lab], and the hospital pays [the lab] a management fee to run labs for us. And so it’s not like we can pull out the revenue for those tests and say, ‘Look at what [the infectious disease department] has generated.’ If we did, they would look really, really mind-blowing.”

— Hospital administrator

First, JHU will make the analysis of the home specimens part of its core business line. To implement the payment model, the JHU laboratory that reviews the home specimen collections plans to bill for that service by using the Medicaid or Medicare number of the individual submitting the specimen and relying on a third-party billing service. However, payment procedures may require the involvement of an independent laboratory company.

Second, George Washington University and its partner (DHCF) are communicating with the Centers for Medicare & Medicaid Services (CMS) to see if and how they can be reimbursed for the program’s virtual counseling component. PAH leaders noted that this component is set up as a fee-for-service model. In order for the model to be sustainable, however, MCOs would need to perceive the program as valuable and want to support it. PAH leaders have been meeting with local MCOs and sharing data with them about the program to gain acceptance of virtual counseling as reimbursable telemedicine at the state Medicaid level.

Third, participating community and health care sites hope to bill Medicaid and Medicare for the provision of HIV and STI preventive services, consistent with the CMS Medicaid Final Rule. PAH leaders reported that many Medicaid programs have difficulties understanding the payment process for community health workers. To date, one organization has started billing for the time that community health workers spend counseling HIV-positive patients, but the practice is not standard.

D. Impact evaluability assessment

After assessing the evaluability of the PAH program, we have concluded that a rigorous impact analysis is feasible and that the best approach for conducting the analysis is a difference-in-differences design, likely with an external matched comparison group for the HIV-positive group and an internal comparison group for the high-risk group. In accordance with this design, we will estimate the difference in outcomes between intervention participants and comparison individuals in the District of Columbia who are at risk for or who are living with HIV. We will then subtract from the post-intervention difference any difference in outcomes between the two groups before the intervention began. This approach will isolate the program impact from any constant differences between the groups (observable or not) that affect outcomes but that remain after matching. Given the projected sample sizes, we estimate that the difference-in-differences design will be able to reliably detect program impacts on each of the core outcomes.

E. Next steps

We look forward to continuing to work with George Washington University for the remainder of the cooperative agreement. Specifically, we will work on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis call for obtaining the list of all Medicaid and Medicare-Medicaid participants, identifying all Medicare-Medicaid beneficiaries in Medicare data, and obtaining District of Columbia Medicaid data from the awardee. After we obtain the data for a sufficient sample size, we will be able to identify the comparison groups and compare baseline characteristics across groups, determining how well the groups match one another. We will assess the balance of the covariates between each treatment group (HIV-positive and at-risk) and their respective comparison group. If we observe few to no statistically significant differences between the treatment and comparison groups, we will produce initial impact estimates for the first one to two program quarters of program operations (depending on data availability), after we create our outcome and explanatory variables. If we observe several statistically significant differences across the two groups, we will use propensity score weighting to better align baseline characteristics across the treatment and comparison groups. We will describe our findings in future reports.

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APPENDIX B.17

JOHNS HOPKINS UNIVERSITY

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REPORT

APPENDIX B.17

HCIA Round Two Evaluation: Johns Hopkins University

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 20, 2015)

Successes

- As of October 19, 2015, Johns Hopkins University School of Medicine had enrolled 32 dual eligibles with dementia into its Maximizing Independence at Home (MIND) program, while 11 other individuals were close to being enrolled.
- Four memory care coordinators (MCCs), operating out of Johns Hopkins Home Care Group and Jewish Community Services, are working closely with these individuals and their families to help them remain safely in their homes.
- MCCs are successfully connecting individuals to meaningful activities, providing tips and referrals to improve the safety of their home environments, and collaborating with the Johns Hopkins University clinical team to address medical issues.

Challenges and strategies to address them

- MIND has struggled with enrollment. Dual eligibles are often difficult to reach and connect to services. They may live in isolated conditions with caregivers who are unable to enroll them or participate actively in the program.
- MIND is addressing the enrollment issue by changing its enrollment criteria. The program no longer requires a pre-existing dementia diagnosis for eligibility, as long as the individual shows signs of dementia through an initial phone screen and an in-home assessment. In addition, MIND is now targeting individuals in an expanded catchment area with a 40-mile radius.
- MIND has also promoted the program more intensely. MIND is getting the word out through communication with churches, medical providers, and service agencies that serve the target population. In addition, the Maryland Medicaid program, in partnership with MIND, has sent multiple letters to the dual eligible population.

Lessons learned

- In-home visits can expose an individual's needs better than a typical office visit. By seeing firsthand an individual's living conditions, MCCs can better assess needs and work more effectively to address them.
- Recruiting dual eligibles is a challenge. MIND has found that other programs and managed care organizations struggle to reach these individuals. MIND is still exploring the most effective outreach strategy.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 20, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and

Children's Health Insurance Program costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Maximizing Independence at Home (MIND) program, which is being implemented by the Johns Hopkins University School of Medicine. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the Johns Hopkins University MIND program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to Baltimore, Maryland; and a review of awardee reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the MIND program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the MIND program's impact evaluability assessment and identify the next steps in our evaluation.

A. Introduction

Johns Hopkins University and two home health providers—Johns Hopkins Home Care Group and Jewish Community Services—are using the HCIA R2 award to implement the MIND program. This program provides in-home care coordination to elder adults living in and around Baltimore who have been diagnosed with Alzheimer's disease and other dementia-related neurodegenerative diseases. The MIND program relies on an interdisciplinary team managed by a geriatric psychiatrist that is composed of clinical professionals and non-clinical community workers, called memory care coordinators (MCCs), to support individuals and families in their homes. The MIND program targets individuals enrolled in Medicare and Medicaid (that is, dual eligibles) because Medicaid pays for long-term care. The MIND program launch date, as defined by Johns Hopkins University, was March 2, 2015.

The MIND program's primary goal is to delay or prevent adults with Alzheimer's disease or other dementias from moving out of their homes and into supported living facilities or nursing homes. The program's theory of change or theory of action (TOC/TOA) is that embedding care management for people with Alzheimer's disease or neurodegenerative dementias in community health organizations will result in better health care, better health outcomes, and lower costs. Additional goals include achieving (1) cost savings from participants remaining in their homes, a safer home environment, and improved well-being; (2) a reduction in the percentage of unmet needs in the Alzheimer's disease and dementia community; and (3) the development of a sustainable payment model that would allow the MIND program to be scaled to the greater community.

The MIND program is reaching its target population through an outreach campaign and letters mailed from the Baltimore City Health Department and the Maryland Department of Health and Mental Hygiene (DHMH). Interested individuals call the MIND study referral line and receive an eligibility phone screen. Individuals who live in the catchment area, who are dual eligible, who have a study partner (typically a caregiver), and who have an indication of dementia—either through a pre-existing diagnosis or short assessment—move to the next phase of the enrollment process. A psychiatric nurse and an MCC visit the individual's home to conduct an extensive assessment that confirms program eligibility and informs the care plan. For each domain in the home visit instrument, MCCs identify unmet needs of the individual and the caregiver (if applicable) and then work with a team of clinical professionals to address these needs. Strategies include (1) connecting participants to meaningful activities; (2) providing education, coaching strategies, and referrals to improve the safety of home environments; and (3) working closely with the Johns Hopkins University clinical team to provide care coordination. Other characteristics of the MIND program are shown in Table 1.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by the MIND program to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to Baltimore (October 19 and 20, 2015). For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our visit, we interviewed program leaders, the clinical team (the director of the clinical intervention and the two nurses who conduct the in-home assessments and provide ongoing clinical support), the evaluation team (which developed the assessment instruments and which conducts the phone screens and baseline and follow-up assessments), and the outreach specialist. We also interviewed leaders from Jewish Community Services and the four MCCs who are contracted by the participating home health agencies. Staff from Johns Hopkins Home Care Group were unavailable for an interview. Via phone, we also spoke with the individuals responsible for developing the payment model and the online training platform to support home care agencies in adopting a similar model.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts that describe the implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative on the MIND program's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Through the MCCs and a team of specialists, the MIND program is effectively reducing the number of unmet needs for people with dementia. The program encourages participants to address their medical issues, improve their home environments, and get connected to meaningful activities, such as those provided in an adult day program. Although it is too soon to tell whether these supports are helping individuals stay in their homes longer, MIND staff and MCCs feel they are making a difference in people's lives. Caregivers have also provided positive feedback, expressing their appreciation to MCCs for listening to their concerns and providing support.

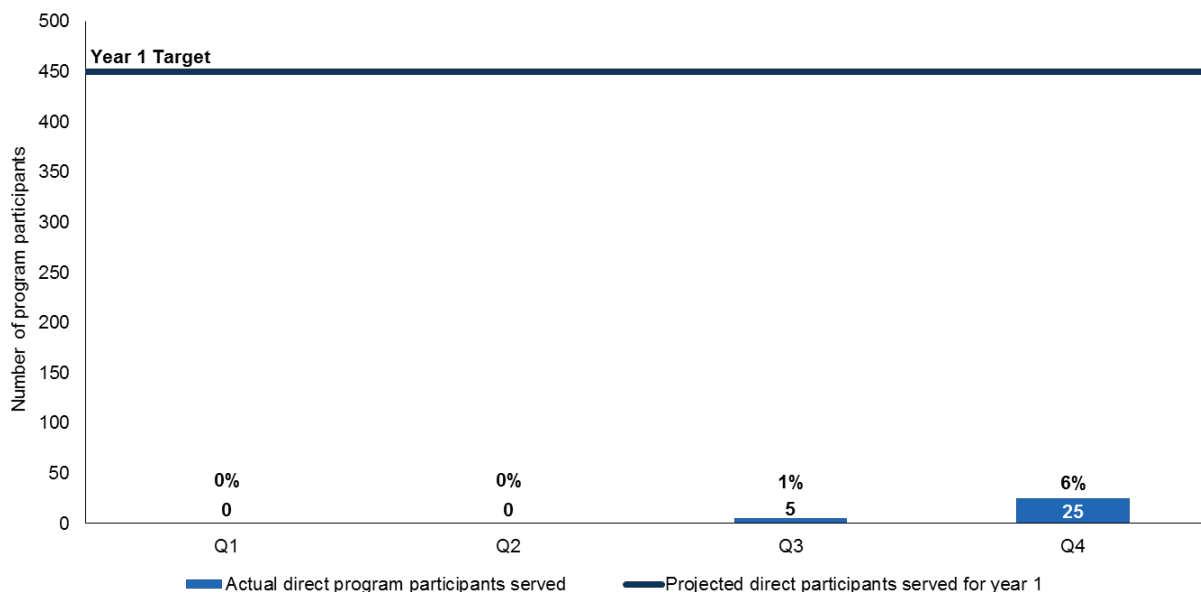
Table 1. Johns Hopkins University: MIND characteristics at a glance

Program characteristic	Description
Purpose	Johns Hopkins University School of Medicine and two home health providers—Johns Hopkins Home Care Group and Jewish Community Services—are using the HCIA R2 award to implement the Maximizing Independence at Home (MIND) program. This program provides in-home care to elder adults living in and around Baltimore, Maryland, who have been diagnosed with Alzheimer's disease or other dementia-related neurodegenerative diseases.
Components	<ul style="list-style-type: none"> • Care management (primary) • Patient and family engagement (secondary) • Health information technology (secondary)
Target population	Elder Medicaid and Medicare beneficiaries in Maryland who have Alzheimer's disease or related neurodegenerative dementias and a study partner, typically a caregiver
Theory of change/theory of action	The MIND program relies on an interdisciplinary team managed by a geriatric psychiatrist that is composed of clinical professionals and non-clinical community workers, called memory care coordinators (MCCs), to support individuals and families in their homes. The MIND program's primary goal is to delay or prevent moving adults with Alzheimer's disease or dementia out of their homes and into supported living facilities or nursing homes.
Payment model	<p>Per capita care management payment, clinical support capitated payment, and shared savings</p> <p>Separate capitated payments for MCC and clinical staff activities; shared savings between Medicaid and home health care agencies</p>
Award amount	\$6,387,736
Launch date ^a	March 2, 2015
Setting	Participants' homes
Market area	Urban and suburban
Market location	Baltimore, Maryland, and surrounding area
Core outcomes	Cost savings and improved patient quality of life resulting from participants remaining in their homes longer and in a safer home environment

^aAfter a planning period, the awardee's program became operational as of this date.

Despite the anticipated positive outcomes for people participating in the program, the MIND program is struggling with enrollment. The program planned to enroll 450 individuals by the end of its first year and 600 by the end of the award. Staff are considering adjusting these goals downward, given that they had only enrolled 25 individuals as of August 31, 2015—seven months after the program was launched (Figure 1). However, as described in detail below, MIND leaders hope to reverse this trend by ramping up outreach activities.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. John Hopkins University does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The three components of the MIND program—(1) care management, (2) patient and family engagement, and (3) health information technology (health IT)—are closely linked. Although we distinguish between these components for evaluation purposes, the program staff consider them part of an integrated program. As a result, the key program facilitators and barriers that we discuss below affect all components.

Program facilitators include (1) the strengths of the in-home care model, (2) the role of the MCCs, (3) support from the MIND team (including clinical staff), and (4) the Dementia Care Management System (DCMS). Each of these features is described in detail below.

The MIND program is built on the notion that in-home visits are essential for assessing and addressing patient needs. Specifically, the MIND philosophy is that home visits can expose an individual's needs better than a typical visit to the doctor. To illustrate this thinking, a member of the MIND clinical team described a patient who was not improving despite a heavy dosage of medication. A home visit revealed that the participant was storing, not taking the medication. With this knowledge, the patient's care manager could promote medication adherence by educating the patient on its importance and providing a pillbox and regular reminders. Through home visits, MCCs and nurses see firsthand participants' living conditions—ranging from safety hazards to the availability of meaningful activities. In addition, participants and caregivers may feel more comfortable in their home environments to discuss challenges and troubleshoot solutions. The insights gained from home visits allow the MIND program to tackle participant needs holistically, ideally leading to better outcomes.

"I am really thankful to be doing [home visits]. You get a snapshot of [the participant's] life and what it is like. A lot of times [the participants] are really looking for help. So it feels like we are closing a gap."

— MIND research assistant

Perhaps the greatest asset to the MIND program is the MCCs themselves. When developing the MCC job qualifications, MIND leaders identified resourcefulness and problem solving skills as the most important attributes. MCCs were not required to be clinical experts on dementia care, although they all have relevant experience or educational training. For example, one MCC worked on a previous Johns Hopkins University research study involving dual eligibles and another worked in a nursing home with late-stage dementia patients prior to being hired to the MIND program. One MCC has an educational background in counseling and psychology and another is a certified nursing assistant who previously worked with elderly populations. In addition, it is essential that the MCCs are creative thinkers, able to successfully research, identify, and access community resources. MIND leaders emphasized the importance of MCCs not becoming overwhelmed by the challenges their participants face, such as poor living conditions, complicated family relationships, and medical issues. The leaders do this by encouraging MCCs to focus on the highest priorities, as identified by participants and caregivers, calmly tackling issues one at a time.

By putting forth this clear vision of MCC qualifications, MIND leaders encouraged the participating home health agencies to hire four dedicated MCCs. The ability of the MCCs to think outside of the box when connecting their participants to community resources is apparent when they describe their jobs. For example, one MCC partnered with a local fraternity house to build a wheelchair ramp at her participant's home. Another MCC spent the day with her participant and his caregiver to obtain a restraining order against a disruptive family member. Because no two participants' needs are the same, MCCs must apply new and creative strategies for each participant. Throughout this process, MCCs work closely with caregivers, providing them needed support and educating them on available resources.

The MCCs also rely on the expertise of the entire MIND team to strategize on participant care. During weekly two-hour clinical team meetings, MCCs go over changes in participant condition, recent activities to address unmet needs, and challenges that arose during the previous week. The Johns Hopkins University team—including nurses, geriatric

“We work with the family . . . to figure out [the unmet needs] and how we can assist [the participant and caregiver] in getting these [needs] met. Often . . . it might be something that does not seem like that big of a deal, but it is a big deal for quality of life.”

— *MIND program leader*

psychiatrists, and leaders—provides suggestions for addressing unmet needs. For example, if an MCC reports a participant’s lack of mobility due to painful feet, the clinical team might suggest connecting the participant to a podiatrist. The MCCs would follow up on this recommendation by scheduling an appointment with the participant’s primary

care physician or a podiatrist. If the participant spends most of the day alone while caregivers are at work, the team might suggest an adult day program or provide simple games. In addition to these regular check-ins, the clinical staff are available to the MCCs at any time throughout the week to provide medical advice or general support. Finally, an occupational therapist is available for participants with behavioral issues, such as wandering, to provide MCCs and caregivers strategies to manage these behaviors and mitigate risk.

The DCMS is a key component of program success. Built specifically for the MIND program, this health IT system has two main features. First, it contains a repository of informational and service-related resources for MCCs to access. As MCCs serve more participants and identify more resources, they populate the database with organizations, service providers, and tips for treating dementia symptoms and behaviors. This process allows MCCs to systematically share resources with each other, improving the effectiveness of their work. Second, the DCMS stores participant information, allowing MCCs to track needs, progress, and outcomes (by assessment domain). As MCCs work with the participants, they indicate whether a need is met or partially met in the DCMS. For example, an MCC sees a rug in a participant’s home that creates a fall risk. If the MCC educates the caregiver on the danger of the rug, the need is indicated as partially met in the DCMS. Once the rug is removed, the need is indicated as entirely met. The DCMS also helps MCCs stay accountable by allowing them to create reminders for themselves and by tracking the amount of time it takes to meet needs.

Despite the positive aspects, the MIND program is struggling to meet its enrollment targets. The vast majority of the 700 individuals initially referred to the program were ineligible because they did not meet the dual eligible requirement. MIND leaders have since learned that this dual eligible population is particularly difficult to reach. For one, individuals with dementia are often isolated due to the stigma associated with their condition. In addition, dual eligibles may have dynamic and chaotic living arrangements. Dual eligibles with dementia may not have a caregiver or study partner available to participate in the program—a requirement for MIND enrollment.

To improve enrollment, the MIND program has implemented three strategies:

1. **Change in eligibility criteria.** The program no longer requires a pre-existing dementia diagnosis for eligibility, as long as the individual shows signs of dementia through an initial phone screen and an in-home assessment. In addition, the MIND program is now targeting individuals beyond the Baltimore area to a catchment area with a 40-mile radius.
2. **Enhanced outreach activities.** The MIND program started recruitment through an outreach campaign and letters mailed from Baltimore's health department and DHMH. In July 2015, letters went to approximately 10,500 individuals. The MIND program's outreach campaign included an article in the *AARP Bulletin*, mailings from several dementia-related public and private organizations, community lectures, and participation in health fairs. Outreach has been expanded to include another round of mailings from DHMH, which consisted of 40,000 letters sent out in October 2015 (10,500 of these letters were repeat mailings to the recipients from July). In addition, MIND has increased communication with churches, medical providers, and service agencies that work with the target population and also used advertisements on restaurant place mats, on billboards, and on the radio as outreach strategies.
3. **Caregiver compensation.** MIND participants receive a one-time compensation of \$25 for completing an assessment associated with the program's evaluation. By providing caregivers this same level of compensation when they complete an assessment, MIND hopes they will be more willing to dedicate some of their time to participate in the program with their family member.

Despite these efforts, it is still unclear whether the MIND program will approach its enrollment target. MIND leaders may have overestimated the number of individuals in the eligibility pool. According to the MIND enrollment specialist, the number of individuals living in the original catchment area who had a dementia diagnosis was only about 2,600 people—which came as a surprise because program leaders thought the number was closer to 10,000. This discrepancy is due to the fact that primary care physicians tend to underdiagnose dementia. In addition, due to Johns Hopkins University's long research history, the Baltimore area is somewhat saturated with programs that test models of care. Both patients and medical providers overlook opportunities such as the MIND program because it is one program among many.

3. How does the awardee make decisions about program-related changes?

MIND leaders monitor program implementation and outcomes through regular communication, computer dashboards, and data collection and review.

- **Regular communication.** Weekly meetings allow team members to discuss challenges, troubleshoot solutions, and identify next steps. The tone of meetings encourages open dialogue in which all opinions are welcome. For example, a researcher reported that MIND leaders were very open to her suggestion of rearranging the assessment questions to end the assessment on a more positive note. In addition, during these meetings, staff can make

suggestions on topics that might not necessarily be within the immediate scope of their work. For example, in a recent meeting, the director of the clinical intervention provided a suggestion to increase enrollment by conducting outreach at beauty salons. Similarly, the project director offered a tip to improve the safety of research assistants while they conduct home visits for the baseline assessment.

- **Dashboards.** Dashboards allow the MIND team to quickly assess enrollment and implementation progress. Created in Excel on a weekly basis, the enrollment dashboard contains the number of individuals referred, enrolled, and ineligible (by reason for ineligibility). This dashboard allows the team to track progress and assess the effectiveness of outreach strategies. For example, through the dashboard, MIND staff can monitor whether the second batch of DHMH letters resulted in an uptick in enrollment. The MIND program is also in the process of finalizing a more comprehensive dashboard that tracks implementation progress and outcomes for those enrolled in the program. This dashboard, produced on a monthly basis, contains metrics related to unmet needs for patients and caregivers (by major domain), emergency department and hospital utilization, and costs.
- **Data collection and review.** Through assessments conducted at baseline, 9 months, and 18 months, the MIND program is monitoring participants' functional status, quality of life, and perception of care quality, in addition to caregiver burden. At the time of this report, researchers had only conducted baseline assessments, so data were not available to evaluate program outcomes. However, given that high quality research is a priority for the MIND program, researchers carefully cross-check all phone screen and assessment data to identify any gaps and internal inconsistencies. These flags are made available on a weekly basis for researchers, MCCs, and nurses to review and reconcile information.

These mechanisms allow MIND leaders to make decisions about ways to improve program success. The MIND program has also been working closely with the Center for Medicare & Medicaid Innovation and its implementation contractor to support enrollment activities. Based on feedback from the program's community advisory board, the MIND program has made its outreach materials more user-friendly and has worked with DHMH to send a second batch of letters. The MIND program also changed its process to better facilitate enrollment. For example, in expectation of increased referrals after sending the additional letters, the MIND program is dedicating more staff to the initial phone screen and in-home visit—placing enrollment activities for another study on hold. In addition, when the MIND program changed its eligibility criteria, it updated its enrollment process so that the full assessment that confirms program eligibility is conducted before the baseline assessment used for evaluation purposes.

4. To what extent has the awardee begun to plan for or implement payment reforms?

The MIND program's payment model includes capitated payment and shared savings components. MIND leaders aim to promote this model with state Medicaid programs, as opposed to other health insurers, because Medicaid covers long-term care. MIND leaders report that the Maryland Medicaid program within DHMH has been a willing partner throughout program

implementation and is open to discussing the payment model approach once the program demonstrates cost effectiveness.

The capitated payments aim to cover the two main types of program costs: (1) the time of the MCCs and (2) the time of the advising clinical team. Therefore, the MIND program proposes two monthly capitated payments—one for care management and one for clinical support. Although the home health agencies that contract the MCCs would receive the care management capitated payment, Johns Hopkins University or an equivalent clinical team would receive the clinical capitated payment. The MIND program is just starting the process of assigning amounts to these capitated payments. MIND leaders expect that as the program rolls out, researchers will gain a better understanding of an MCC's ideal caseload and the amount of time the clinical team needs for an average participant.

The MIND program also plans to develop a shared savings component to encourage home health agencies to adopt the MIND approach. Savings will be shared equally between the home health agency and the Medicaid program. Through its evaluation, the MIND program aims to identify the cost savings generated from the postponement of institutional placement and from safer living environments. The MIND program plans to include in its financial analysis the following costs: (1) regular medical costs covered by Medicare, (2) Medicaid-funded home-based and community-based services, and (3) Medicaid-funded institutional care. The MIND program hypothesizes that individuals enrolled in the program will have lower Medicaid costs than those in the control group because they will rely more on community-based care than on more costly institutional care. Medicare costs between the control and treatment groups should be relatively similar. The MIND program is in the process of accessing Medicaid claims data to start building its financial model and has put in the data request with Medicare. However, the robustness of the financial model depends upon the program increasing the number of enrollees.

D. Impact evaluability assessment

The recommended approach to evaluate the MIND program is a difference-in-differences design with a matched comparison group identified through Medicaid and Medicare claims data. Using this approach, we will measure the difference in outcomes of participants who received the MIND intervention relative to those for otherwise similar dual eligibles with dementia who do not receive the intervention. We will subtract from this post-intervention difference any pre-intervention difference between the two groups. This approach will isolate the program impact from any constant differences between the groups (observable or not) that affect outcomes but remain after matching. Given the projected sample size (450 participants) and expected impacts (based on a pilot study for a predecessor version of the program), we estimate that this design will reliably detect impacts for several of the outcomes that are most central to the program (total expenditures and nursing home transition, for example). However, the sample size will not be sufficient to detect impacts in the other core measures, such as rate of hospitalizations, emergency department visits, and 30-day readmissions, which we will examine in our evaluation for HCIA R2 as a whole.

E. Next steps

We look forward to continuing to work with the MIND program for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

As of October 2015, the MIND program had approximately 32 enrollees. We are tracking efforts to increase enrollment to determine whether the MIND program will have sufficient enrollment to conduct the planned difference-in-differences approach. If there is sufficient enrollment, we will develop baseline characteristics and identify a comparison group. If enrollment continues to be slow, we will consider alternative approaches, including greater reliance on the data collected by the MIND program on the effects among their participants.

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APPENDIX B.18

MOUNT SINAI **HEALTH SYSTEM**

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REPORT

APPENDIX B.18

HCIA Round Two Evaluation: Mount Sinai Health System

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–November 3, 2015)

Successes

- The Mobile Acute Care Team (MACT) program has developed an infrastructure for delivering acute care services at home, which can now be expanded to include subacute rehabilitation (SAR) services. The program is also providing observation and palliative care services to a limited number of participants.
- Providing acute care in the home encourages patient engagement and shared decision making between MACT clinicians, patients, and patients' caregivers.

Challenges and strategies to address them

- Recruitment and enrollment have been persistent challenges for the MACT program, although program staff have implemented several strategies to address them. They added SAR, palliative care, and observation services; expanded eligible clinical diagnoses and removed exclusion criteria; and increasingly relied on referrals to recruit acute care and SAR patients.
- It has been challenging to coordinate many outside vendors—who are accustomed to working normal business hours rather than the around-the-clock schedule necessary for the MACT program—to provide services, medications, and supplies in the home. In response, MACT staff made changes to some vendor agreements.

Lessons learned

- Providing care in patients' homes requires a considerable amount of coordination and logistics across a wide array of providers and vendors. Although the team originally hoped to provide all services using outside vendors (which is more replicable by other programs), it has become more efficient and effective to provide nursing care and some pharmaceuticals using internal Mount Sinai resources, which gives more control to program staff.
- To encourage successful recruitment, MACT staff have tried to maintain the program's visibility at all recruiting sites. The team continually conducts outreach to hospital staff across departments and tries to maintain a constant staff presence in recruiting sites. Team members have also relied increasingly on referrals to maximize program enrollment.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our virtual site visit on November 3, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39

awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. The purpose of this annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Bundled Payment for Mobile Acute Care Team Services (MACT) program, which is being implemented by the Icahn School of Medicine at the Mount Sinai Health System. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Mount Sinai's MACT program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial telephone discussions with the awardee, key informant interviews conducted during a recent virtual site visit to Mount Sinai, and a review of Mount Sinai's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Mount Sinai's MACT program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of Mt. Sinai's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

Mount Sinai, which includes the Icahn School of Medicine at Mount Sinai and seven hospital campuses in New York City, received an HCIA R2 cooperative agreement to implement the MACT program. The program is based on and expands the Hospital at Home model, which was developed at the Johns Hopkins University School of Medicine and adopted at several sites across the country.¹ The program was created to test a bundled payment model in which patients receive acute and post-acute services at home for about 33 days (acute care for 3.3 days, on average, followed by up to 30 days of post-acute care).

For the first program year, Mount Sinai contracted with the Visiting Nurse Service of New York (VNSNY),² among other vendors, to implement the MACT program. VNSNY nurses and other home health clinicians and Mount Sinai doctors, nurse practitioners (NPs), and social workers delivered acute care (and, more recently, subacute rehabilitation [SAR]) services in each participant's home. At the end of the first program year (July 31, 2015), Mount Sinai stopped using VNSNY to provide nursing services and is now recruiting nurses to join the health system to fill this role. The new nurses should be in place by the end of 2015. However, VNSNY, along with other contractors, will continue to provide other clinical services to MACT participants, including physical, occupational, and speech therapy; home health aides; and health coaching.

Towards the beginning of the second program year, MACT staff began accepting patients who needed SAR services that would typically be offered in a skilled nursing facility (SNF).³ This was done primarily to increase enrollment; however, it was also viewed as an expansion of the MACT infrastructure and in line with MACT's general philosophy of delivering services in patients' homes that are normally delivered only in facilities like hospitals and nursing homes. For these SAR participants, the MACT bundle is 30 days—about 20 days of SAR services⁴ and about 10 days of post-SAR services, similar to those offered to acute care participants. Hereafter, we will refer to MACT's acute care and SAR services as MACT's "arms." "Arm" is not a term that MACT staff use or would even recognize, but we use it to distinguish these two sets of

¹ See <http://www.hospitalathome.org/> for more information on the model and its evidence base.

² VNSNY, a nonprofit home health network, provided nursing services to MACT participants by visiting them at home several times a day. The organization decided to remove infusion nursing—a major component of the clinical services provided to MACT—starting July 31, 2015.

³ Medical professionals sometimes use the term "subacute rehabilitation" to refer to short-term programs conducted in a nursing home (see "Your Guide to Hip Replacement Surgery" at http://www.mountsinai.org/static_files/MSMC/Files/Faculty%20Profile%20Pdfs/Calin%20Moucha/Hip%20Replacement%20Brochure.pdf). Subacute rehabilitation is thus equivalent to the services provided under the Medicare SNF benefit, which, in turn, is one of Medicare's post-acute benefits.

⁴ Given that this target population has just begun to enroll in the program, 20 days is an estimate based on analyses conducted by MACT staff before enrolling individuals.

services from the “components,” which refer to various facets of the program such as home care, care coordination, or patient and family engagement (Table 1). The services offered in each arm are discussed in more detail in Section C.2.⁵ We use the term “MACT program” to refer to the awardee’s staff and its entire set of services.

Target population. The MACT program targets adults (age 18 and older) who live at home in Manhattan. Acute care participants must have one of the following conditions:

- Congestive heart failure (CHF)/heart failure
- Chronic obstructive pulmonary disease (COPD)/asthma⁷
- Dehydration⁶
- Diabetes
- Pneumonia
- Other diagnoses: cellulitis, urinary tract infection, pulmonary embolism/deep vein thrombosis (DVT)

There are no disease restrictions for SAR participants.

For the acute care arm, participants must be Medicare or dual-eligible beneficiaries who are enrolled in fee-for-service (FFS) or HealthFirst managed care. For the SAR arm, participants must have Medicare FFS or be dually eligible. The MACT staff anticipate that additional insurers will accept MACT participants in early 2016. Acute care participants must meet several requirements: they must (1) need acute hospital care for one of the aforementioned MACT target conditions, (2) meet the MCG criteria (formerly the Milliman Care Guidelines) for hospital admission, and (3) qualify for enrollment based on the modified Hospital at Home criteria for inclusion and exclusion. The patient must also have a safe home environment during the MACT program. Potential participants are asked about their homes to assess the presence of bedbugs, firearms, patient or family smoking (if the patient requires home oxygen), lack of electricity, or methadone use. If the environment is determined to be unsafe, the individual is excluded from the program. Patients must also have a caregiver or home health aide to provide non-clinical care (such as cooking meals or providing help in the bathroom), as needed.

Recruitment and enrollment. Acute care participants are recruited from emergency departments (EDs) and observation units of selected Mount Sinai hospitals and targeted outpatient practices. SAR participants are accepted by referral from any relevant hospital unit on Mount Sinai’s main campus, including the observation unit and ED. MACT staff, the referring inpatient physician, and physical therapist collaborate to determine if the patient should receive SAR (for example, physical therapy after surgery) at home rather than in an inpatient SAR

⁵ We later describe how the awardee is contemplating adding two more service arms in the home.

⁶ Asthma and dehydration were added later to increase recruitment.

facility. Medicare's three-day inpatient hospital stay requirement, as required for traditional SNF coverage, does not apply to MACT SAR participants.⁷

Services provided. For the acute care participants, MACT staff members visit them several times a day during the acute care phase (lasting an average of 3.3 days). The participants receive a daily physician or NP visit along with one or two nursing visits per day. Also, depending upon clinical need, participants may receive radiology, lab, pharmacy, and infusion services (with medications delivered to the home), durable medical equipment (DME), and therapy (physical, occupational, or speech). Mount Sinai contracts with vendors to provide many of the in-home services, such as the collection of laboratory specimens and at-home x-rays. These services are coordinated by a MACT staff member (likely a social worker or NP, depending on the service and phase of the intervention). In addition, if emergent or after-hours care is necessary, MACT trained paramedics will visit the patient and communicate with the MACT physicians to ensure the participant receives appropriate care.

During the 30-day post-acute phase, acute care participants might receive visits from a physician and nurse (though less frequently than during the acute care phase) in addition to outpatient care coordination and physical, speech, and occupational therapy. The social worker may also focus on shifting the participant's care into the community or arranging for community-based services as needed.

Care provision is slightly different for participants in the SAR arm. SAR is primarily focused on physical therapy (typically one or two hours per day), but depending on participants' needs, they may also receive many of the same services that the acute care participants do. This is analogous to how traditional SNF inpatients receive the same inpatient services as hospitalized patients do, such as nursing and phlebotomy, but with a much greater emphasis on physical therapy. The SAR model also lasts 30 days; 20 of the days (on average) are expected to be spent on SAR. During the remaining 10 days, the SAR participants receive post-SAR services, primarily care coordination, as in the acute care model.

Goals: Compared with traditional inpatient hospitalization, MACT's 30-day bundled payment model for acute care (which includes both the acute care that patients would have otherwise received in the hospital and any post-acute services deemed appropriate by MACT staff) is intended to lower costs, improve process and clinical health outcomes, and increase participant satisfaction. Specifically, the MACT program is designed to reduce the costs to the Centers for Medicare & Medicaid Services (CMS) by more than 50 percent for the 30-day episode of care (compared with the 30-day cost of care for a person with similar health problems

⁷ The three-day inpatient hospital stay requirement means Medicare will pay for a SNF stay if the beneficiary has been in the hospital (as an inpatient), for at least three consecutive midnights in the prior 30 days. For more information, see: <https://www.medicare.gov/coverage/skilled-nursing-facility-care.html>.

who goes to a traditional hospital).⁸ In addition, the care provided by MACT staff is intended to produce health outcomes that are as good as or better than outcomes the participant would have had if hospitalized. Finally, the MACT program seeks to meet or exceed national quality benchmarks for general and disease-specific acute and post-acute care and to achieve participant satisfaction scores that are equal to or better than a comparable hospitalized group. An analogous 30-day bundle for SAR patients was under development at the time of our site visits.

The purpose of our first site visit with Mount Sinai was to collect detailed information on the staff's and stakeholders' experience and progress in implementing the MACT program, changes to the MACT program, facilitators of and barriers to implementation, and updates to the payment model.

Table 1. Mount Sinai: MACT characteristics at a glance

Program characteristic	Description
Purpose	The MACT program provides acute, post-acute, and SAR services in a patient's home.
Components	Home care (primary) Care coordination (secondary) Patient and family engagement (secondary) Shared decision making (secondary) Health IT (secondary)
Target population	Acute/palliative/observation participants: People who present to Mount Sinai and targeted outpatient settings with eligible primary diagnoses (such as CHF, COPD exacerbation, asthma, and others), meet the MCG admission criteria for their target conditions, live at home in Manhattan, and can be safely cared for at home. Subacute rehabilitation participants: People who are cared for by Mount Sinai, are referred for SAR based on clinical and SAR needs, live at home in Manhattan, and can be safely cared for at home.
Theory of change/theory of action	Services may include radiology, lab work, nursing, DME, pharmacy and infusion services, telemedicine, physical therapy, and occupational therapy. The 30-day bundled payment model for acute and post-acute care at home is intended to easily replicable for hospitals that want to start similar programs, given that this project will create a funding mechanism to pay for the care. (A similar but separate model may be needed for the SAR and observation participants.) The provision of home care is intended to increase participant satisfaction and result in lower costs and better process and clinical health outcomes.
Payment model	Shared savings, fee-for-service, bundled payment Model 1 is a MACT 30-day bundled payment model under Medicare Shared Savings, including both acute and post-acute care. Model 2 is an all-inclusive, diagnosis-related group (DRG)-plus-MACT payment model. Variants of the models will also be developed and tested. SAR and observation unit-level care may require the development of alternative payment models for these populations.
Award amount	\$9,610,517
Launch date ^a	11/18/2014
Setting	Participants' homes

⁸ The 50 percent reduction excludes the core MACT services, which are paid under the cooperative agreement. This target is more easily measured than the estimated 20 percent run-rate savings, which include the cost of the core MACT services.

Table 1. (continued)

Program characteristic	Description
Market area	Urban
Market location	Manhattan, NY
Core outcomes (acute care arm)	<p>Clinical outcomes:</p> <ul style="list-style-type: none"> • Decrease complications of care (for example, reduce the use of physical or chemical restraints; reduce the rate of falls, delirium, pressure ulcers, and nosocomial infections) • Shorten length of stay • Improve disease-specific measures (for example, increase the percentage of patients achieving blood pressure control) • Decrease mortality rate <p>Cost and resource use:</p> <ul style="list-style-type: none"> • Decrease 30-day unplanned readmissions • Decrease all-cause hospitalizations • Decrease total Medicare Part A and B payments • Decrease rate of hospital ED visits <p>Care experience:</p> <ul style="list-style-type: none"> • Increase patient satisfaction (modified Hospital Consumer Assessment of Healthcare Providers and Systems)

^a After a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Mount Sinai to the implementation and monitoring contractor that cover the first year of the award (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with awardee and our virtual site visit with Mount Sinai from October 20 through November 3, 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

Given the MACT program's current low enrollment and the transition from VNSNY nurses to Mount Sinai-employed nurses, we delayed our in-person site visits until spring 2016 and instead conducted virtual site visits—a series of telephone interviews—with key MACT staff and program partners. This allowed us to gain diverse perspectives on the implementation of the program and to wait until the Mount Sinai nurses were in place to visit in person. During our virtual site visits, we interviewed program leaders at Mount Sinai, frontline staff and clinicians, and other program stakeholders (such as steering committee members).

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences.

The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative on Mount Sinai's implementation experience.

The MACT program had just recently begun enrolling SAR participants in the weeks before our site visit. Therefore, most of our implementation findings (when discussing facilitators and challenges) refer to the acute care arm of the program rather than the SAR arm, but we note where we have information relevant to the SAR arm as well.

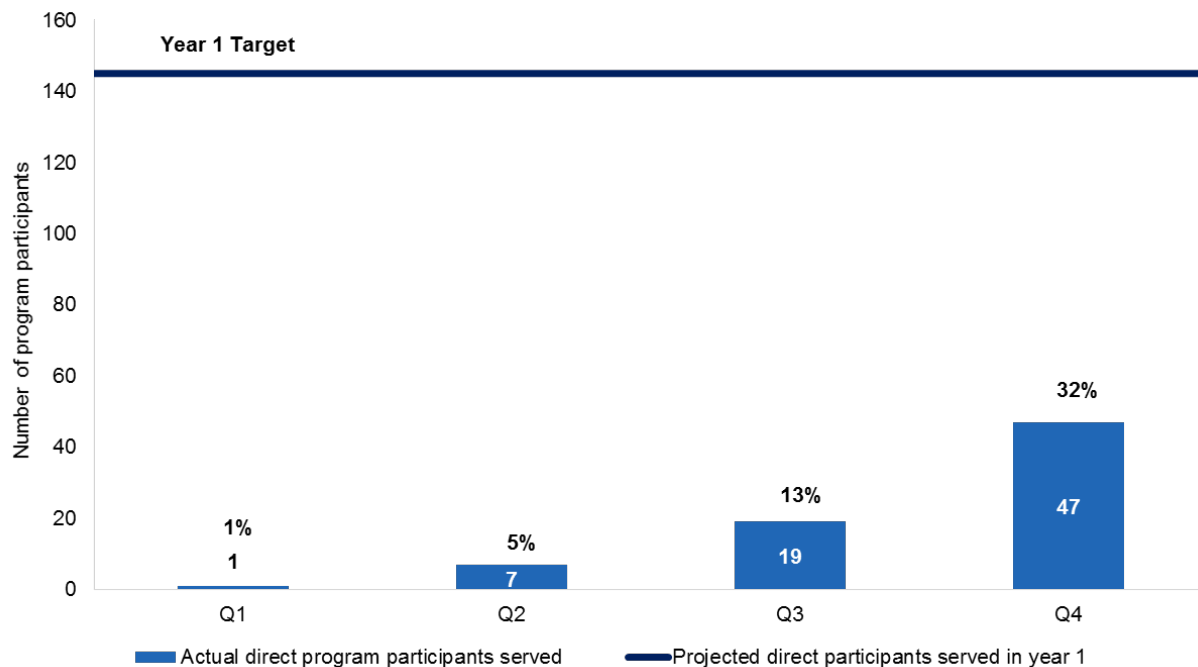
C. Findings

1. How effectively has the program been implemented?

The MACT program was implemented on its original timeline; it was launched in November 2014 and enrolled its first acute care participants with a participating Medicare Advantage plan (HealthFirst) at that time. In early 2015, the MACT program also began including Medicare FFS participants. The program has evolved since its original design—staff have added a new target population and are delivering additional services. At the beginning of implementation, the program was targeting only patients in need of acute care, replacing care in a hospital with hospital-level services in patients' homes. That continues, but in the new SAR arm, patients typically treated in a SNF can receive those services at home. This new SAR arm represents a fundamentally different target population and set of intervention services compared with the acute care arm.

To date, the MACT program has not enrolled the anticipated number of direct program participants (participants whose care is directly paid for by HCIA R2 funding) into the acute care arm. Figure 1 shows the projected and actual numbers of such participants by quarter. There were several reasons for the lagging enrollment, discussed in Section C.2.b. Note that these numbers do not reflect the relatively recent inclusion of SAR participants. During our site visits, the recruitment of SAR participants appeared to be going well and was perhaps happening even more quickly than recruitment for acute care participants (although this was early in the SAR arm implementation).

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: The projected direct participants served reflects the cumulative and unique number of people the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 cooperative agreement from program launch through the fourth program quarter. Mount Sinai does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the MACT program, and what strategies have been developed to address these challenges?

a. The MACT program delivers home-based acute and subacute care, building an infrastructure that can also be adapted to serve other patient needs at home

During roughly the first year of program implementation, the MACT program was intended to provide only acute care at home, following the Hospital at Home model. As the program progressed, the team began to view the MACT program as a possible basis for providing an increasingly wide variety of clinical services at home. In the weeks before our site visit, staff expanded the program's home care model to also offer SAR at home.

Besides acute care and SAR, the program team has expanded the model to provide two additional services at home that are traditionally provided in inpatient facilities: (1) hospital ED observation stays and (2) acute care services for patients who are eligible for palliative care at home. For the ED stays, MACT staff recently enrolled a limited number of Medicare participants from the Mount Sinai ED who could be discharged from MACT acute care within 24 hours. Had

these participants received care in a traditional hospital, these episodes of care would have been categorized by Medicare as observation stays because they lasted less than 48 hours. After being “discharged” from MACT’s equivalent of an observation stay, these participants received 30 days of post-acute care, as is customary for the acute care participants in the MACT program. For the services for palliative care-eligible patients, the program helped such patients in MACT acute care decide whether to enroll into Medicare hospice care. These participants were initially admitted to the MACT acute care arm, but it became clear that their goals of care aligned with the Palliative Care Unit at Home. The MACT program essentially became a bridge to providing palliative care, and MACT providers worked with the patients and their caregivers to ensure they were able to receive appropriate palliative care and stay in their homes as appropriate. As a service to the patient and their family, these participants remained enrolled in the 30-day post-acute care phase, along with receiving palliative care at home.

The MACT program benefited from several key facilitators during the first year of implementation. First, MACT staff drew on their knowledge and relationships from the Mount Sinai Visiting Doctors program, which has provided home-based primary care since 1995. Many MACT physicians were already comfortable providing home-based care (although they noted the important differences between primary and acute care) because of their work with Visiting Doctors and now with MACT. These clinicians may also be familiar with community-based resources that are available for MACT participants. In addition, the MACT program accepts referrals for the acute care arm from Visiting Doctors, and doctors from this program support the MACT enrollment process by screening potentially eligible participants (who are Visiting Doctors patients) at the patients’ homes. Therefore, if a Visiting Doctor’s patient calls the Visiting Doctors program with a medical concern that would likely qualify for MACT acute care, the Visiting Doctor will go to the patient’s home, assess the person, and refer him or her to the MACT program when appropriate.

Although MACT program staff have drawn on their experiences with the Visiting Doctors program, they acknowledge the many differences between primary care and acute (and now SAR) care at home. The team has continually tried to be flexible to both (1) effectively identify the right patients during recruitment and enrollment and (2) adapt program operations to best serve participants’ needs. MACT program staff also report that a high level of engagement and teamwork has facilitated program implementation.

The MACT program has also had several challenges related to providing acute care at home rather than in a facility. Many of the challenges were related to coordination and logistics, which necessitated changes to some of the MACT vendor agreements. At first, the MACT program depended almost entirely on outside agencies to deliver services necessary to provide hospital-level care in a patient's home. Using outside agencies was a deliberate decision by MACT staff so that the model could easily be scaled and replicated in other sites across the country. However, several vendors were not accustomed to providing hospital-level, time-sensitive acute care in the home, which caused delays. For instance, it was sometimes challenging for a pharmacy vendor to get medications to the home as quickly as needed, and contracted nurses were not always available to provide the number of nursing visits necessary each day at the needed times. Given these challenges, Mount Sinai brought some of the external vendor services in house. For example, after working out some internal logistics, the Mount Sinai inpatient pharmacy can now distribute some medications to MACT staff, so these medications are accessible at all times. Additionally, as mentioned earlier, infusion services and all nursing tasks formerly provided by VNSNY will soon be done by Mount Sinai nurses. This change will give MACT staff more control over the MACT nurses' scheduling and activities to ensure full nursing coverage for all MACT participants.

"The nursing and pharmacy coordination—especially at the beginning of MACT—was very, very challenging. We would have a patient at home that needed an IV infusion. The nurse would be there, and the pharmacy would not have delivered on time. We always found a way to work it out so that the patient was okay, but the coordination piece was very challenging with the outside vendors."

— *Participating clinician*

Another challenge was that some of the MACT vendors do not operate outside of normal business hours (compared with the 24-hour time frame needed for hospital-level acute care). This has affected recruitment and enrollment because MACT staff cannot enroll participants after late afternoon and guarantee they would receive services in their homes that evening. Therefore, the team must identify eligible patients—those who will be admitted to the hospital—by mid- to late- afternoon to ensure all medications, supplies, and vendors can arrive at the home for the initial visit on the day of admission. Otherwise, the staff might not be able to enroll the participant. To address this, MACT staff try to work with admitting physicians to make the admission decision earlier than they otherwise would and have also on occasion held the potential participant in the observation unit overnight.

b. Recruitment and enrollment have been persistent challenges for the MACT program, although staff have several strategies to address them

Participants are recruited by Mount Sinai physicians and NPs from several Mount Sinai-affiliated practice locations, including the Mount Sinai ED and observation unit; the Mount Sinai St. Luke's ED; and two Mount Sinai outpatient practices—Coffey-Martha Stewart Center for Living and the Internal Medical Associates' Preventable Admissions Care Team. Although generally similar, recruitment processes vary somewhat according to which arm the participants enroll in and whether they enroll at Mount Sinai or St. Luke's. For example, patients may be admitted from the ED to the hospital more quickly in some sites than in others, leaving less time

for MACT staff to assess and enroll patients. In addition, admitting physicians at different sites have varying levels of comfort with referring or enrolling their patients into home-based acute care. As of August 31, 2015, the program had enrolled 47 participants.

Recruitment and enrollment have been lagging partly as a result of a narrowly defined target population (see the eligibility criteria in Section A), the timing of patient recruitment discussions, and changes in Medicare payment guidelines. MACT staff noted that finding the right patient is vital for this intervention, but this can be tricky because participants must meet all program requirements and be too acutely ill to be treated in traditional outpatient care, yet not so sick that they need intense (perhaps ICU-level) care that cannot be provided at home. It was also difficult for MACT staff to identify the most appropriate point to approach the patient; it had to be around the time the admission decision was being made—soon enough that the patient was not already committed to the notion of being admitted to the hospital, but not so soon as to possibly influence the physician’s admission decision.

Finally, updates to Medicare’s inpatient payment requirements—and associated structural changes at Mount Sinai—might have also affected recruitment. When the program was conceived, Medicare had not yet initiated the two-midnight benchmark for Medicare inpatient

“Having observation units has really changed the kinds of patients who are admitted to the hospital. Having a lot of services in an academic institution like this that helps keep patients out of the ER and hospital has also changed the kinds of patients who are admitted. Most of the patients who end up [in] the hospital are very sick. We’ve had to think about filling a slightly different role, as we’re not an ICU.... We are trying to figure out who are the right patients for [the MACT program] and how can we [provide services] without increasing costs to the system overall.”

— *Participating physician*

payment, which was developed by CMS to alleviate some of the ambiguity in determining when patients qualify for inpatient or outpatient payment. As the name suggests, the benchmark states that physicians should admit only patients whom they believe will need inpatient care for at least two days. Other patients should receive outpatient care (except for some services that CMS believes should always be provided during inpatient stays).⁹ Around the same time, Mount Sinai built a stand-alone, 20-bed observation unit in Mount Sinai Hospital to care for patients who either need less than two days of care or need to be briefly monitored before the physician can

determine if they should be admitted. MACT staff note that the construction of the observation unit has affected the evolution of the Hospital at Home model and the pool of eligible participants, as the model was originally intended for patients with stays of fewer than five days. In this new system, some of the patients MACT staff were expecting to care for are now being diverted to the newly constructed observation unit, and the patients being admitted to the hospital from the ED anecdotally have a higher level of acuity, which makes them less likely to qualify for the

⁹ CMS presumes that inpatient stays that include two or more midnights are appropriate and has directed its Medicare administrative contractors and recovery auditors to not review claims spanning two or more midnights after admission for a determination of whether the hospital admission and patient status were appropriate. For more information on the two-day benchmark, see http://healthaffairs.org/healthpolicybriefs/brief_pdfs/healthpolicy_brief_133.pdf.

MACT program. This new care structure within Mount Sinai has led to fewer potential MACT enrollees than expected, which has caused MACT staff to carefully consider how to appropriately expand the pool of potential enrollees.

The team implemented several strategies to increase MACT program enrollment:

- Added SAR, observation, and palliative care at home services and expanded recruitment to patients eligible for those services.
- For the acute care arm, expanded eligible primary clinical diagnoses (adding dehydration and asthma) and removed some exclusion criteria (for example, an HIV diagnosis). For the newly added SAR population, there are no specific diagnoses targeted.
- Increasingly relied on referrals to recruit acute care and SAR patients. Team members continue to conduct extensive outreach to hospital staff across departments, including participating in daily rounds (in both the observation unit and the ED) and reaching out to admitting/referring physicians, case managers, and social workers (in the ED, observation units, and inpatient units). They reported that it may be especially effective to ensure that Mount Sinai case managers know about the MACT program and eligibility criteria, given that clinicians are busy caring for patients and that case managers are deeply involved in the workflow and can be the “eyes and ears” of the program to increase referrals. The MACT NPs also try to maintain a constant presence at St. Luke’s Hospital, as staffing permits, to maximize recruiting efforts at that site. Not only does relying on referrals increase the number of potential participants MACT staff can recruit, but case managers may have already mentioned the program to these patients and perhaps changed their expectations about home care, which MACT staff expects will increase the program acceptance rate.
- Expanded the hours for accepting referrals.
- Accepted referrals from ambulatory settings (that is, patients being seen in outpatient clinics or by Visiting Doctors who are acutely ill and would otherwise be sent to the ED for evaluation).

Although not implemented yet, several other strategies were being developed or considered by MACT staff as of the date of our virtual site visit. The strategies involve:

- Negotiating contracts with additional insurers to increase the pool of potential participants
 - Considering expanding the catchment area to include the Bronx
 - Considering recruiting from Mount Sinai Beth Israel Hospital
- c. **MACT staff coordinate a patient’s care during both the acute and post-acute care phases and during his or her transition out of the MACT program**

Home-based acute care is coordinated by MACT staff through twice-daily huddles. These teleconferences occur around 9:00 a.m. and 4:00 p.m. and are attended by all care providers,

including doctors, NPs, social workers, physical therapists, and nurses. The team shares updates about each patient's conditions and clinical needs, and the group develops a timeline for when each provider will visit the patient. In both the acute and post-acute phases, the social worker coordinates the participant's community-based resources to ensure all needs are met. For example, the social worker may enroll a participant in community-based programs, such as Meals on Wheels, or ensure the patient is receiving home health services if he or she qualifies for them. At the end of the post-acute phase, MACT staff shift a patient's care back to his or her primary care physician.

One of the main challenges the MACT staff have faced in coordinating care is that patients' insurance may not cover services, such as home health, that are necessary for them to receive care at home. Because the MACT staff's first priority is patient safety, if the patient is not able to obtain the necessary services or support at home, the team will not recruit the patient. The team must be certain that the participant can complete important tasks, such as using the bathroom at all hours of the day and vacating the home in case of an emergency. To mitigate this barrier, the MACT program offers a certain number of additional home health hours supported by the HCIA R2 funds. The MACT staff have also requested permission from CMS to allocate funds not used in Year 1 to increase the number of home health hours offered to participants. However, these hours would be offered only to patients with a very short-term need for them because people discharged from MACT will have to be able to function at home with the level of care provided through their insurance or private funding.

Another obstacle to coordinating care is that it can be challenging to determine whether the MACT staff or the participant's primary care provider is responsible for managing the participant's post-acute care. To mitigate this, the team has developed open lines of communication with the participants' primary care physicians to ensure that duplication of care does not occur and that the patients' care is being managed.

d. Providing care in the home encourages patient engagement and shared decision making between MACT clinicians, patients, and patients' caregivers

Unlike in hospitals or SNFs, nurses and other health care professionals are not available 24 hours a day in the home, so caregivers or home health aides are expected to provide some care to participants. For example, they may need to help the participant to the bathroom or cook meals. They are also responsible for calling the MACT staff if incidents occur, such as if the patient's condition worsens, there is an emergency, or there is a delay with any needed services. The MACT program has a phone number patients and caregivers can call to reach a MACT staff member at any time. The team also engages patients and families in shared decision making by talking with them about participants' care goals and respecting patients' wishes. The paramedics who are trained to work with MACT participants attend a full day of training and shadow the Visiting Doctors to become more comfortable working with these patients. For example, they learn more about the home care framework and respecting a patient's care decisions, even when it means not taking them to the hospital, as long as it's safe to provide the necessary care at home.

There are a number of ways in which MACT staff encourage patients and families to engage in shared decision making. First, providing care to participants in the home establishes a different power dynamic than if they were at the hospital; MACT providers are guests in the participants' homes, and the participants control who is allowed to enter, giving them a greater sense of autonomy. In addition, patients and caregivers have a general estimate of when the provider will be visiting, which allows the family to be present during the visit. The ability to gather the full family during a visit creates a situation more conducive to shared decision making. Finally, by entering the home, the clinician is able to assess various features of the environment (including the safety and layout of the house, safety and adequacy of kitchens, and safety modifications to bathrooms and bedrooms) and what patients are actually doing in their daily lives. This affords the opportunity to have meaningful discussions on how to handle certain self-care activities.

"It's their rules; it's their house. When the patient is in the hospital, it's our rules. They don't have much choice, and they have to follow certain guidelines and certain rules of the hospital. In their home, it's much more naturally patient centered. You're a guest in their home when you visit them."

— *Participating physician*

MACT staff have faced challenges in engaging participants and families in care giving. For example, some participants do not understand why they need frequent visits from health care providers, and others do not feel comfortable having numerous providers enter their homes (and personal space) every day. To mitigate these concerns, MACT staff began providing potential participants with tentative schedules so that patients and families understand the intensity of the acute care program before a patient enrolls. The social worker also meets each patient in the hospital before enrollment so the patient and family understand she will be visiting them in the home along with the other MACT staff. After receiving this information, if participants are still concerned about the level of care, the MACT staff talk through the process again and remind them that the highest level of care occurs during the first three or so days of the program, and once the acute care phase is completed, the level of care will diminish.

e. The customized use of health IT has also facilitated MACT program implementation, despite MACT staff having to navigate several start-up challenges

Everyone on the MACT team has access to the Epic electronic medical records (EMR) system to document and share clinic notes, including VNSNY nurses and clinicians at St. Luke's. MACT staff devoted a significant amount of the HCIA R2 funds (as well as staff time) to work with an Epic consultant to build a customized system. This was essentially a hybrid of an inpatient and outpatient Epic build. However, the team found that Epic is not well designed for the home environment (as it is traditionally an inpatient EMR); it requires an "always-on" connection, which proved challenging for the MACT clinicians. Despite having iPads and VPN connections, MACT staff sometimes had trouble documenting information in patients' homes in real time due to Internet dead zones or slow connections in some areas they visited. Some clinicians preferred to enter this information back at their offices to ensure a more efficient workflow and to spend more time with patients during home visits.

MACT staff have also begun to work with paramedics to provide urgent home assessments, enhanced by the use of video. Besides connecting the participants to the MACT physicians by phone, paramedics can hold up an iPad or iPhone to allow for a video assessment by a MACT physician or NP, who can then determine whether it is appropriate for participants to remain at home, taking their preferences and goals of care into account. Unfortunately, there are often technical issues with the video feeds; therefore, most of the communication in these situations is done verbally over the phone.

3. How does Mount Sinai make decisions about program-related changes?

All HCIA R2 awardees need timely program enrollment and performance data with which to make decisions about program improvements. MACT staff do not formally use data from the implementation and monitoring contractor's self-reports to inform such decisions. However, they have several mechanisms by which they collect data to assess the program in real time and make improvements or operational changes accordingly. Team members have a process for reporting adverse events, which include adverse clinical outcomes as well as operational items, such as whether a vendor or medication does not arrive to a patient's house on time. Any adverse clinical event that MACT staff deem necessary to be assessed would be reviewed by Mount Sinai's hospital adverse event reporting system (for example, a death—even if expected for a patient under palliative care—would be deemed necessary to assess, whereas a patient who does not receive medication on time but suffers no medical consequences might not be deemed necessary).

The entire MACT staff also meet weekly to discuss program implementation and progress. They discuss internal monitoring data, such as recruitment and enrollment numbers, admissions by diagnosis, and readmissions. They use these data to inform discussions about program improvements. The team reported that in the first program year, it has spent a significant amount of time discussing enrollment numbers and strategies that might improve recruitment processes.

4. To what extent has Mount Sinai begun to plan for or implement payment reforms?

MACT staff believe the lack of payment models has limited the growth of the Hospital at Home program. Therefore, a key goal is to develop a payment model that can be used flexibly to fit the needs of funding organizations that partner with the MACT program. Mount Sinai plans to develop multiple models and to estimate the savings to payers. However, this work is being pushed back until Year 3 because the models will not be used by CMS during the award period to fund these services; the new timeline will also allow time to generate and gather program-related financial data. Model 1 was initially proposed to be a MACT 30-day bundled payment model under Medicare Shared Savings, including both acute and post-acute care. This model will not only include a bundled payment for core MACT services, such as nursing and physician home visits, but will also specify that other services provided to MACT patients by program partners, such as care received during the initial emergency visit, will be billed fee-for-service with a five percent withhold. These partner organizations will participate in Medicare shared savings. The non-program partners will bill fee-for-service without the withhold and will not participate in shared savings. Model 2 was initially proposed to be an all-inclusive, DRG-plus-

MACT payment model. Mount Sinai plans to develop variations of these two models based on services used, expected costs, and expenditure data along with expected variations in the interested payers' needs. The Mount Sinai team has partnered with an actuarial firm, Milliman, to provide support for the payment models by developing historical figures and modeling projections of hospital cost and utilization for the various types of MACT participants.

With the addition of the SAR arm as well as observation and palliative care patients to the MACT program, its leaders have had to consider whether and how to modify the payment models to support these additional services and participants. MACT leaders believe that palliative care participants can be included in the acute care payment models as originally proposed, given that these participants may often receive a similar level of care in the initial acute care phase. However, a new model will likely be needed for SAR participants and—if the program continues to enroll participants who would receive observation unit-level care—a separate model will also be needed for them.

D. Impact evaluability assessment

Significant issues would limit our ability to conduct a rigorous impact evaluation of the acute care arm of the MACT program. The main issues are the eligibility criteria, which rely heavily on clinical assessments that cannot be replicated in claims data, combined with low enrollment into the acute care arm of the intervention. It may be possible to instead evaluate the SAR arm of the intervention. We continue to gather information about enrollment and eligibility criteria so that we can assess the evaluability of the SAR arm.

Although a rigorous impact evaluation is not feasible for the acute care arm, we propose to report unadjusted descriptive statistics on key outcomes over time, along with adjusted statistics that take into account (when possible) participants' demographic and health characteristics. For the SAR arm, we preliminarily recommend a rigorous impact analysis using a difference-in-differences design with an external, matched comparison group using an intent-to-treat approach. We will match participating MACT SAR patients to other patients receiving SAR services in a SNF. This recommendation is subject to change as we learn more about the SAR arm of the program—such as its enrollment, eligibility criteria, and confirmation of inclusion/exclusion criteria—as it is implemented.

E. Next steps

We look forward to continuing to work with Mount Sinai for the rest of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a site visit consisting of in-person interviews with awardee leaders and program staff in the summer of

2016. We will use these interviews to follow up on key issues identified during the virtual site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include identifying all Medicare and dually eligible beneficiaries who receive care in the MACT program, and distinguishing between acute care and SAR participants. At this point, we plan to construct a comparison group for SAR participants; after we identify possible comparison beneficiaries, we will use propensity-score matching to minimize nonrandom selection bias of people in the treatment group. Our primary goal is to construct a matched comparison group that appears similar to the MACT SAR treatment group on key observable characteristics that affect treatment status and outcomes. Because we do not plan to conduct a rigorous impact evaluation of acute care participants, we will present descriptive summary statistics for them each quarter. These data will provide demographic characteristics and information about health care utilization and expenditures for MACT acute care participants. We will describe our findings for all participants in future reports.

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APPENDIX B.19

CITY OF MESA FIRE AND MEDICAL DEPARTMENT

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REPORT

APPENDIX B.19

HCIA Round Two Evaluation: City of Mesa Fire and Medical Department

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 22, 2015)

Successes

- Community care units (CCUs) and community care special units (CCSs) are actively responding to 911 calls from low-acuity participants and successfully diverting about 70 percent of these callers from the emergency department.
- A synergistic partnership with local police emerged unexpectedly. Police value assistance from the CCUs and from CCSs when dealing with citizens in police custody seeking medical attention and with citizens who exhibit behavioral health conditions.

Challenges and strategies to address them

- Launching the transitional care component for higher-acuity patients after they are discharged from the hospital has taken longer than expected. The City of Mesa Fire and Medical Department partnered with a hospital-affiliated organization to coordinate this component, worked with the hospital's cardiology department to develop care protocols for participants with congestive heart failure, and outfitted CCUs with the equipment necessary to adhere to the protocols.
- Incorporating advanced practice providers (APPs) and licensed behavioral health care providers into fire department protocols and culture has been challenging, especially because providers are not Mesa Fire and Medical Department employees. In response, the Mesa Fire and Medical Department appointed a deputy chief to manage operations like defining protocols, educating fire department staff, and addressing issues as they arise.

Lessons learned

- Effectively introducing an innovative 911 response requires consistent communication among all stakeholders, including Mesa Fire and Medical Department staff at all levels, participating providers, local partners, and the public.
- Effectively launching an innovative program for delivering care requires an incremental approach that demonstrates "proof of concept" through small trials before scaling up the intervention.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 22, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded the Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39

awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Community Care Response Initiative (CCRI) program, which is being implemented by the City of Mesa Fire and Medical Department. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the Mesa Fire and Medical Department's CCRI program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to the Mesa Fire and Medical Department, and a review of the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the Mesa Fire and Medical Department's program, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the Mesa Fire and Medical Department's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The Mesa Fire and Medical Department, an emergency medical services provider and 911 dispatch operator in Mesa, Arizona, is using its HCIA R2 funds to pilot the CCRI program, which consists of the following components:

- Direct provision of care to low-acuity 911 callers through physician extender mobile units
 - Three community care units (CCUs) staffed with a captain paramedic and an advanced practice provider (APP) to provide urgent care
 - Three community care special units (CCSs) staffed with a captain paramedic and a licensed behavioral health clinician to provide behavioral health services
- Workflow redesign and incorporation of triage nurses into the 911 dispatch system
 - Redesigned dispatch protocols to identify low-acuity callers appropriate for CCU/CCS response
 - A nurse triage specialist is present in the call center during regular business hours to help triage 911 callers to the appropriate level of response or to respond to callers directly by telephone to avoid dispatching a unit
- Provision of transitional care through CCUs to higher-acuity patients with chronic conditions recently discharged from Mountain Vista Medical Center
- Centralized medical direction with physicians experienced in emergency medicine available to consult by telephone with APPs in the field or with triage nurses as needed

Before receiving HCIA funding, the Mesa Fire and Medical Department transported virtually all 911 callers to the emergency department (ED). The Mesa Fire and Medical Department designed the CCRI to address overcrowding in the region's hospital EDs due to a high volume of low-acuity 911 calls, particularly during flu season and in the winter months. The awardee noted that many seasonal residents in Arizona are older, retired individuals who do not have a regular source of primary care in the local area. Program leaders also noted that Arizona's expansion of Medicaid under the Affordable Care Act has contributed to an increase in the low-acuity 911 call volume and subsequent ED transport in recent months.

The Mesa Fire and Medical Department partnered with Mountain Vista Medical Center, whose patients will be eligible for transitional care services. Mountain Vista Medical Center also employs APPs working in CCUs. The Mesa Fire and Medical Department also partnered with Crisis Preparation and Recovery, which employs licensed behavioral health clinicians working on CCSs.

In its theory of change/theory of action (TOC/TOA), the awardee hypothesizes that using physician extender mobile units to treat low-risk participants on site in the community and to provide higher-risk participants with transitional care services in their homes after hospital discharge will reduce inappropriate use of ambulances to transport participants to the ED and hospital readmissions. This approach will, in turn, reduce ED overcrowding and help to focus emergency services on priority patients, thus reducing costs and improving the quality of care. In three years, the awardee's goals are to (1) reduce low-risk patients' ED visits and ambulance use by 40 percent, (2) reduce hospital readmissions among higher-risk patients, and (3) save \$41 million compared with the baseline through reduced ED and ambulance use. Projected cost savings are specific to the low-acuity 911 response component; the awardee has yet to project cost savings from the hospital transition component. Additional program characteristics are shown in Table 1.

Table 1. Mesa Fire and Medical Department: CCRI characteristics at a glance

Program characteristic	Description
Purpose	The Mesa Fire and Medical Department is redesigning its 911 emergency response by dispatching CCUs and CCSs to low-acuity callers and treating them on-site in the community—often at home—rather than transporting them to the ED. CCUs will also provide transitional care services to patients with selected chronic conditions recently discharged from the hospital.
Components	<ul style="list-style-type: none"> • Using physician extender mobile units to provide direct care to low-acuity 911 callers (primary) • Redesigning 911 dispatch protocols and incorporating a nurse triage specialist to better identify low-acuity calls suitable for CCU/CCS response (primary) • Providing transitional care to higher-acuity patients recently discharged from the hospital (primary) • Providing centralized medical direction through facilitated physician consultation with APPs and triage nurses (secondary)
Target population	<ul style="list-style-type: none"> • Low acuity 911 callers • Patients with chronic conditions recently discharged from Mountain Vista Medical Center identified as high risk for readmissions
Theory of change/theory of action	The awardee hypothesizes that using physician extender mobile units to treat low-risk participants on site in the community and to provide higher-risk participants with transitional care services in their homes after hospital discharge will reduce inappropriate use of ambulances to transport participants to the ED and hospital readmissions. This approach will, in turn, reduce ED overcrowding and help to focus emergency services on priority patients, thus reducing costs and improving the quality of care.
Payment model	<p>Shared savings, fee-for-service, bundled payment</p> <p>The Mesa Fire and Medical Department is building a billing infrastructure so that it can submit fee-for-service claims to insurers for the new services rendered. In addition, the Mesa Fire and Medical Department is exploring partnerships with payers to secure reimbursement for transitional care services. The awardee is also exploring partnerships with local providers to secure reimbursement through, for example, shared savings arrangements, bundled payments, or affiliation with an accountable care organization.</p>
Award amount	\$12,779,725

Program characteristic	Description
Launch date ^a	December 1, 2014
Setting	Physician extender mobile units dispatched from the Mesa Fire and Medical Department stations to community settings and patients' homes
Market area	Urban, suburban
Market location	Mesa and Apache Junction, Arizona
Core outcomes	<ol style="list-style-type: none"> 1. Reduce low-risk patients' ED visits and ambulance use by 40 percent in three years 2. Reduce high-risk readmissions in three years (high-risk patients: congestive heart failure [CHF], diabetes, chronic obstructive pulmonary disease [COPD], asthma, and pneumonia) 3. Reduce ambulance use and ED visits to save \$41 million in three years

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by the Mesa Fire and Medical Department to the implementation and monitoring contractor covering the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and in our site visit to the Mesa Fire and Medical Department from October 20 through 22, 2015. For the document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and supplemental materials.

During our site visit, we interviewed program leaders at the Mesa Fire and Medical Department, frontline staff, and other program stakeholders, including administrative partners from Mountain Vista Medical Center, IPC Healthcare, and Aviant Healthcare. (IPC Healthcare runs the Bridge to Care Solutions program. Awardee documents identify the organization as Bridges to Care). Because the Mesa Fire and Medical Department's intervention is concentrated in a single metropolitan region, we visited all fire departments participating in the program, including three in Mesa and one in Apache Junction at Superstition Fire and Medical Department. We also visited the alarm center which receives all 911 calls for the region.

A two-person team used semi-structured protocols to conduct the interviews. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training on coding, achieved inter-rater reliability on coding, and applied codes that identify program components, research questions, and concepts that apply to implementation experiences. The evaluation team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this report on the Mesa Fire and Medical Department's implementation experience.

C. Findings

1. How effectively has the program been implemented?

As of October 2015, the Mesa Fire and Medical Department's physician extender mobile units were responding to low-acuity 911 calls largely as planned. Before the program began, the CCU and CCS teams participated in 24 hours of crisis intervention training in which they learned about the care protocols and key health care facilities in the community. As of our site visit, three CCUs, modified ambulances staffed with a captain paramedic and an APP (either a nurse practitioner or a physician assistant), were fully operational around the clock seven days per week. The CCUs provide services similar to an urgent care center, such as administration of first aid; suturing; administration of glucose, oxygen, antibiotics or other medication; treatment for asthma attacks and allergic reactions; immunizations and other preventative care; and referrals.

Three CCSs, staffed with a captain paramedic and a licensed behavioral health clinician, were also operating as planned, on a more limited schedule than CCUs, from noon to 10:00 p.m. seven days a week to provide on-site behavioral health assessments, counseling, crisis management, referrals, and transportation to inpatient psychiatric facilities. In Mesa, APPs work 24-hour shifts with captain paramedics; in Apache Junction, APPs also work 24-hour shifts, but captain paramedics work 48-hour shifts. Consequently, APPs and captain paramedics work in consistent pairs in Mesa, whereas in Apache Junction, there are two APPs during each captain paramedic's shift.

Mesa Fire and Medical Department staff reported that CCUs and CCSs dispatched from fire departments in Mesa have been routinely busy responding to a relatively high volume of calls, but those operating out of Apache Junction (a more affluent suburb with a larger elderly population) were experiencing a lower volume of calls.

The Mesa Fire and Medical Department estimates that it is already exceeding its ED diversion goal of 40 percent: CCUs are diverting closer to 60 percent of participants from the ED, and CCSs are diverting closer to 80 percent of participants. The awardee's self-

"The biggest thing for me is getting to be on these calls where I know for the last 12 years, this person's going to the ER. And today, they don't have to. That's pretty cool for me."

— *Captain paramedic*

measurement and monitoring report shows that the six units combined diverted 70 percent of low-acuity 911 callers from the ED from June to August 2015. The awardee defines low-acuity callers as those for whom a CCU or CCS was dispatched. However, the Mesa Fire and Medical Department also noted during our site visit that it has had less success diverting Medicare patients from the ED, since potentially serious medical conditions could not so easily be ruled out in this population, given their age and higher frequency of co-

morbidities. The awardee hopes to have more success with the Medicare population when it fully implements the transitional care component of the CCRI, which targets higher-risk patients.

The Mesa Fire and Medical Department continues to refine its 911 dispatch approach to optimally incorporate CCUs and CCSs into the response. Respondents described the dispatch process as inherently challenging, given that 911 callers often provide incomplete or inaccurate information, and it is the responsibility of emergency responders to err on the side of caution. The dispatch, triage, and emergency response teams work collaboratively and continuously to assess patients and dispatch whichever unit can give the appropriate level of care. However, emergency medical response units equipped with basic or advanced life support are dispatched if there is any doubt, with an ambulance on standby to transport the patient to the ED. After the emergency response team arrives at the scene, they may determine that a CCU or CCS unit is warranted and stay on scene until the appropriate unit arrives.

“Some of the issues we see on the EMS side is just getting the right information out of the patient. People can be very confused, they can be very generalized, and that’s hard when you’re doing it over the phone to say what direction this patient should go in. But the system is constantly working and refining that and it’s getting better and better, so that the calls that CCU is getting are more appropriate to CCU.”

— Captain paramedic

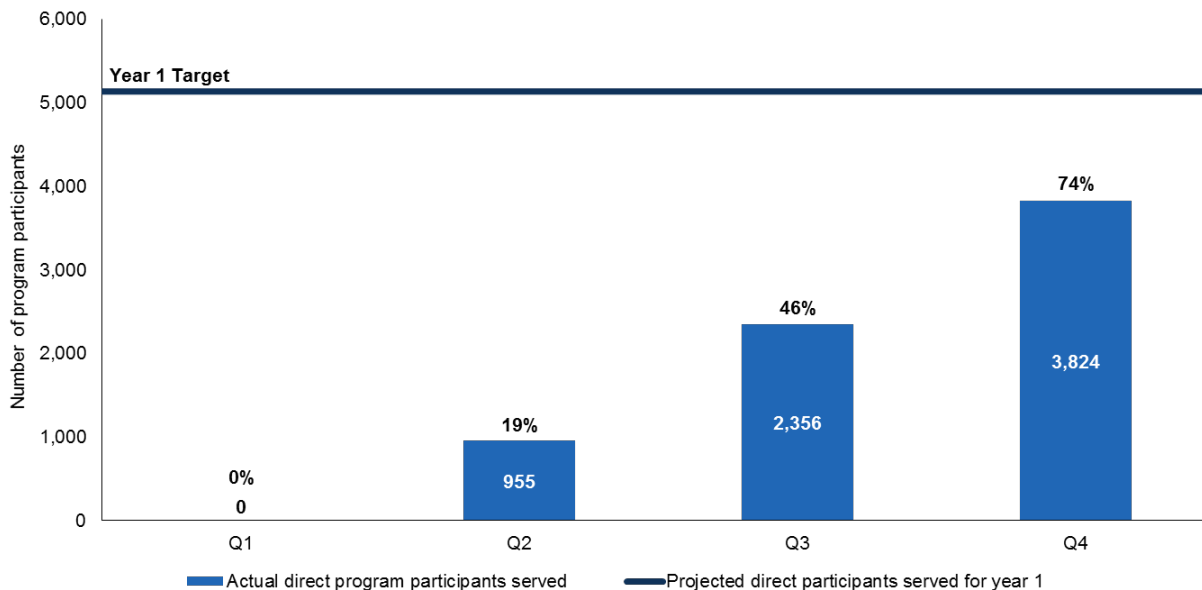
The nurse triage component of the program was not implemented until June 2015 and is currently underutilized. While revised dispatch protocols are intended to identify lower-acuity 911 calls that can potentially be handled by a CCU or CCS, the CCRI model also incorporates a triage nurse to determine the appropriate level of response for low-acuity callers based on more nuanced clinical protocols. However, developing dispatch protocols suitable to this context took longer than expected, delaying the start of the nurse triage component. The Mesa Fire and Medical Department now employs two registered nurses (RNs) who work 8:00 a.m. to 5:00 p.m. Monday through Friday. From June to August 2015, the Mesa Fire and Medical Department reported that 911 dispatchers transferred 81 calls to the triage nurses; the nurses were able to treat four cases by phone without dispatching a unit. The awardee is considering additional ways to integrate triage nurses so that they can assist more patients.

The Mesa Fire and Medical Department also experienced delays in launching the transitional care component targeting high-risk patients discharged from Mountain Vista Medical Center. In consultation with Mountain Vista’s medical director, the Mesa Fire and Medical Department decided on a staged approach to this component of the program, starting with patients with CHF—a condition of particular interest to the hospital and its cardiologists because of the high risk of hospital readmission. The awardee plans to add additional diagnoses at a later date. At the time of our site visit, the Mesa Fire and Medical Department had not yet launched the transitional care component, as it was still developing care protocols and installing the necessary equipment in the CCUs, but the awardee indicated that it would begin enrolling CHF patients on November 1, 2015.

Overall, the Mesa Fire and Medical Department reports having served 3,824 patients from December 2014 to August 2015, which represents about 74 percent of its 5,137 projected participants (Figure 1). The awardee attributes this lower-than-expected enrollment primarily to delays associated with the transitional care component. The Mesa Fire and Medical Department

also anticipates an uptake in enrollment after seasonal residents return to the area in the fall and winter.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014-August 2015.

Note: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. The Mesa Fire and Medical Department does not have indirect program participants.

2. **What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?**
 - a. **Primary component: Using physician extender mobile units to provide direct care to low-acuity 911 callers**

The fire department's established role in the community as an emergency medical responder has facilitated partnerships with and buy-in from local stakeholders for the CCRI. Fire departments are recognized community resources, strategically located to reduce

"Police love us. Our relationship as firefighter and police has always been great, but this is just maybe even that much better."

— Captain paramedic

response time and pre-equipped with emergency medical supplies. Several respondents mentioned that community trust in the department as a public service entity has helped increase acceptance of the CCRI. The new, synergistic relationship between the Mesa Fire and Medical Department and the local police department has been an

unexpected, albeit a welcomed, development. Police often encounter people with behavioral health issues and have found the CCS units to be a valuable source of help. Police have also found CCUs to be helpful in treating individuals in their custody who request medical attention to avoid detention, whom they would otherwise have to escort to the ED. For their part, the CCS and CCU teams also welcome having police on site to alleviate safety concerns in difficult situations. This support allows both members of each community care response team to focus on medical or behavioral issues that need to be addressed.

Although the CCRI has community support, the Mesa Fire and Medical Department has encountered some unanticipated resistance from patients. Several captain paramedics and APPs on the CCU teams noted that many low-acuity patients insist on being transported to the ED regardless of their circumstances, and responders are legally required to oblige. Some respondents noted that this is particularly the case among lower-income patients enrolled in Medicaid who know that their insurance covers the use of an ambulance and an ED visit. In some cases, this situation reflects a mistaken perception that the CCUs would provide a lower standard of care than that provided in the ED. In other cases, patients have nonmedical reasons for wanting to go to the ED, such as homeless patients seeking shelter and food. Some CCRI personnel want more discretion to refuse to take patients to the ED in some cases, but they also noted that there should be more of an effort to educate the public about the CCRI and the services it provides.

As the CCUs and CCSs have become better known throughout the Mesa Fire and Medical Department and better integrated into its operating structure, the department has come to value their services more and more. During our site visit, program leaders noted that CCUs and CCSs have been very well and very quickly received in the fire stations that deploy mobile units, where emergency responders in the field now ask for them routinely. Like the police, the emergency medical responders particularly value the help of the CCSs in situations involving behavioral disturbances. Although the units can be dispatched anywhere, their services are less known and less understood in other fire stations. As a result, the Mesa Fire and Medical Department leaders have focused on educating staff throughout the department about the purpose and function of the program through onsite presentations and by integrating the CCUs/CCSs into the operational structure of the stations from which they operate.

Defining the human resources infrastructure to support the new APP roles is an ongoing challenge. Because the Mesa Fire and Medical Department's job descriptions, training requirements, and supervisory system are derived from its traditional function as an emergency responder, there was no readily available way to accommodate the CCRI's APPs (who did not come up through the Mesa Fire and Medical Department ranks) into the existing human resources infrastructure. The Mesa Fire and Medical Department therefore partnered with other organizations to oversee these professional services during the program's implementation phase: physician assistants and nurse practitioners on the CCU teams are employees of Mountain Vista Medical Center, and the licensed behavioral health clinicians on the CCS teams are employed by Crisis Preparation and Recovery (a Title XIX-certified outpatient behavioral health and crisis services company). However, these arrangements have created challenges of their own.

Mountain Vista Medical Center had no existing cost center or supervisory system into which the CCRI APPs would fit, which complicated the logistics of setting up such basic services as payroll, employee IDs, e-mail accounts, and vacation schedules. Crisis Preparation and Recovery has its own set of requirements for case reporting and documentation, which often leads to behavioral health clinicians putting in extra hours beyond their 10-hour shifts on the CCSs.

The APPs and the behavioral health clinicians feel more connected to the fire stations where they work than to their employers, and they sometimes felt that their employers were not equipped to respond to challenges arising in a fire department setting. To alleviate some of the complexity arising from this management structure, the Mesa Fire and Medical Department has assigned a deputy chief to manage operational tasks such as aligning the policies of the three entities and clarifying the chain of command. However, virtually everyone with whom we spoke agreed that the better approach over the long term would be to have the Mesa Fire and Medical Department directly employ the APPs and behavioral health clinicians.

Integrating the CCRI into the fire department chain of command has been challenging. In the early stages of implementation, the CCU and CCS teams reported directly to the CCRI program director at the Mesa Fire and Medical Department headquarters, not to battalion chiefs at the implementing sites. This represented a departure from the usual chain of command within the fire stations, so Mesa Fire and Medical Department leaders focused on engaging with the battalion chiefs at the operating sites and building them into the chain of command. However, the battalion chiefs expressed some discomfort about having personnel on their teams who do not report directly to them.

Issues related to seniority and the command structure can also create some ambiguity as to who is in charge in the field. The APPs have more clinical training than captain paramedics and are presumably responsible for patients' clinical care. However, the captain paramedic outranks the APP and is responsible for the overall safety and management at the scene and ultimately responsible for determining whether to dispatch an emergency response team. Once emergency responders arrive at a scene, the captain paramedic of that team assumes control. The rationale is that captain paramedics are trained specifically in emergency response, whereas the APPs' training and experience are in handling lower-acuity patients (since more seriously ill patients in an ED or clinic settings are more likely to be treated by physicians). However, APPs and behavioral health clinicians on the CCU and CCS teams raised some concerns about the professional ethics of potentially deferring to a paramedic against their own clinical judgement. The captain paramedics on the CCU and CCS teams generally trust and respect their partners' clinical expertise, and most respondents reported a positive working relationship that allowed them to discuss and resolve differences of opinion. Some captain paramedics noted, however, that the APPs vary in their experience and level of comfort treating some conditions.

CCRI requires fire department personnel, APPs, and licensed behavioral health clinicians to recognize and adapt to differences in professional culture and working styles. Fire department captain paramedics, who are accustomed to the high-adrenaline, fast-paced, constantly changing nature of emergency response work, had to adjust to the much slower pace

and more predictable nature of work in the lower-acuity CCU cases. They are also unaccustomed to collecting patients' insurance information for billing and reporting purposes, which is a little at odds with the professional culture of public service. Captain paramedics who work on the CCSs also acknowledged that dealing with behavioral issues day in and day out, including large numbers of suicidal patients, could be depressing, although they learned a lot from the behavioral health clinicians on the team about how to deal with such situations. The captain paramedics we interviewed during our site visit volunteered to participate in CCRI, and most of them appreciate the change of pace and the opportunity to address patients' needs more effectively than they could in response to a routine 911 call. However, the length of visits, which could often last for hours, often tested their patience, and some look forward to returning to the excitement and variety of their usual jobs once their CCRI "tour of duty" is over. Even traditional emergency responders not participating in CCRI had to adapt to longer calls when waiting for CCU teams to confirm that a patient would not require transportation to the ED.

Adapting to fire department culture also presented challenges for APPs and behavioral health clinicians. Fire department personnel are accustomed to following strict protocols and chains of command, whereas APPs and behavioral health clinicians are used to working with more autonomy and exercising more clinical discretion. As clinical professionals, they are also accustomed to enjoying a certain degree of social status in the larger community, but as newcomers who did not come up through the fire department ranks, they tend to be regarded as the low person on the totem pole by others in the department. CCS teams also work on a schedule that differs greatly from that of other fire department personnel, so they were less likely to be present for community meals at the fire department and felt less socially connected.

The Mesa Fire and Medical Department must resolve these differences in culture and status if it is to successfully integrate employees who have not worked in a fire department into the Mesa Fire and Medical Department infrastructure.

CCRI personnel cite resource limitations and restricted scope of practice as factors inhibiting their ability to provide care for lower-acuity patients. In many instances, patients who might otherwise be treated by CCUs are transported to the ED for simple laboratory tests needed to rule out more serious conditions. CCU teams noted, in particular, that having access to i-STATs—handheld blood analyzers—would enable APPs to perform some diagnostic tests to determine whether patients could be treated at home. Since i-STATs and other equipment are key to implementing the transitional care component of the CCRI, as described in Section c below, the program leaders are working with their partners to provide the necessary tools to the CCU teams. At the time of our visit, APPs were also not allowed to order x-rays for their patients, which could also rule out conditions requiring hospital care, although program leaders might pursue this capability in the future.

In some cases, program leaders have determined that some restrictions on the APPs' scope of practice are necessary in order for the program to be accepted within the community. For example, given the current national concern about opiate abuse, the leadership team, in consultation with Mesa's city council, decided that CCUs would not carry or prescribe narcotics.

Some APPs felt that this unnecessarily limited their ability to divert patients from the ED, since they could use an existing database that monitors the use of prescription drugs to identify patients who are known abusers. Other APPs had no objection to this restriction, citing concern for the teams' safety in some urban locations.

Although the program leaders do not foresee revisiting the narcotics policy in the near future, they will continue to assess the need for additional resources or an expanded scope of work in the context of the program's cost and effectiveness. The program leaders were also working to procure an electronic medical record to replace the existing 911 encounter-based system, which will improve their ability to document and track patient care.

b. Primary component: Redesigning 911 dispatch and triage

Refining the emergency dispatch process to incorporate CCUs, CCSs, and triage nurses is a work in progress. Under the current process, the police department answers all 911 calls and transfers callers who report a medical or fire emergency to dispatchers in the Mesa Fire and Medical Department's alarm center. The dispatchers, who have no clinical training, follow strict, pre-defined protocols to determine the appropriate level of response. For medical emergencies, the first questions they ask are whether the patient is alert, conscious, and breathing. If the answer is "no" to any question, the closest emergency medical response unit with advanced life support is dispatched immediately to the site. If the answer is "yes" to all three questions, the dispatcher continues to follow a decision tree to determine the next level of response, which could be an emergency response unit (with either advanced or basic life support), a CCU, a CCS, or a triage nurse. Regardless of the apparent level of acuity, the only 911 calls that can be referred directly to a CCU, a CCS, or a triage nurse are those in which patients are speaking on their own behalf. Responders also call the patient to triage further while en route and continue to assess the situation after they arrive. Part of the dispatch calculus is also based on proximity: available emergency responders who are closest to a caller's home can be dispatched to low-acuity calls, arrive at a scene first and, if appropriate, wait for CCU/CCS to arrive. This approach often results in numerous units responding before it can be determined whether a patient can be treated on site by a CCU or a CCS, or must be transported by ambulance to the ED.

Program leaders also recognize that the role of the triage nurse should be better defined and integrated into the process. Many respondents noted that the triage nurses are underutilized. Relatively few calls are referred to them under the existing emergency dispatch protocols, and the triage protocols that the nurses follow limit their professional discretion. Awardee leaders are considering ways to use the nurses more effectively, such as by refining decision trees so that more calls are transferred to them and allowing them to more freely exercise their professional judgment in determining how best to respond to 911 callers and patients. Program leaders also suggested that the Mesa Fire and Medical Department may pursue partnerships with local physician groups and launch a wellness hotline that patients may call to speak with a nurse.

c. Primary component: Transitional care

The Mesa Fire and Medical Department encountered challenges launching its transitional care component for patients discharged from the hospital. Designing this component of the program has required close collaboration with Mountain Vista Medical Center with respect to identifying and coordinating care for patients with chronic conditions who are at high risk for readmission. The Mesa Fire and Medical Department must also get input and buy-in from hospital physicians on the protocols that the APPs will follow in treating these patients. The awardee initially piloted the transitional care component in September 2015 but soon decided to delay the start to allow time to better work out these details. The Mesa Fire and Medical Department has partnered with IPC Healthcare—an organization that has contracted with Mountain Vista Medical Center to coordinate post-acute and continuing care for patients with chronic conditions—to provide transitional care services to patients discharged from the hospital. IPC Healthcare is affiliated with Aviant Healthcare, which offers an electronic platform that providers will use in the field to coordinate patient care. Coordinating all the organizations has made the transitional care component complex, but administrators from participating entities are committed to the program. This team anticipates that additional challenges will arise after the transitional care component is formally launched, which informed the Mesa Fire and Medical Department's decision to start with just the CHF diagnosis. Program leaders would like to add sepsis, COPD, and pneumonia after they have demonstrated proof of concept with CHF patients.

During the pilot, patients recently discharged from the hospital were not particularly receptive to home visits from the CCU team—perhaps because they did not understand the purpose of the program or recognize the need for the services. The Mesa Fire and Medical Department and IPC Healthcare are still determining the best approach to patient enrollment—specifically, whether to have the IPC Healthcare's patient care coordinator or the CCU team enroll patients before they are discharged. The awardee has also enlisted the cardiologists' support in introducing the program to patients while they are in the hospital and in the context of ongoing management of their condition.

The awardee's goal is for the APPs to provide advanced clinical care to prevent recently discharged patients from returning to the hospital. Some APPs expressed concern that their background in emergency or primary care did not equip them to manage patients with CHF. In consultation with the medical director and Mountain Vista Medical Center cardiologists, the awardee developed protocols for APPs in treating CHF patients at home. The protocols entail assessing patients for potential weight gain and their response to changes in medication dosage. To execute the protocols, CCUs need to be outfitted with scales and i-STATs, without which all patients exhibiting weight gain would immediately be referred back to the hospital.

Although there were some delays in procuring i-STATs as the team negotiated logistical issues (such as who would calibrate the devices), the Mesa Fire and Medical Department prepared to launch the transitional care component in November 2015. The awardee plans to deploy CCUs for the transitional care component mostly from the Apache Junction location, which is closer to Mountain Vista Medical Center and serves an older population. Apache

Junction units have also had fewer low-acuity 911 calls than their counterparts in Mesa, so they have more capacity to manage transitional post-hospital care for patients with chronic conditions.

d. Secondary component: Centralized medical direction

The awardee recently launched a facilitated consultation component to assist APPs in responding to low-acuity 911 calls. In August 2015, the awardee launched centralized medical direction, a 24-hour help line that gives CCU and CCS teams access to one of five rotating physicians available for consultation. Participating physicians—one of whom is the medical director overseeing the CCRI—are familiar with the program and can offer guidance to personnel in the field. Before HCIA R2 began, paramedics could call a hospital-based help line, but they sometimes received inappropriate guidance because hospital call takers were not familiar with pre-hospital protocols or with limitations on paramedics' scope of practice (such as their inability to prescribe medication). Although centralized medical direction was still quite limited at the time of our visit, CCU and CCS teams regard it as an improvement over the hospital's help line and have found it helpful for obtaining guidance in ambiguous cases or in confirming that their proposed approach makes sense. Program leaders are considering additional ways to use these on-call physicians, as call volumes remain fairly low.

3. How does the awardee make decisions about program-related changes?

The Mesa Fire and Medical Department uses data and predictive analytics to refine its dispatch processes and operational decisions, such as determining the best hours for CCSs to operate and the optimal time frame in which to visit CHF patients after they are discharged from the hospital. The Mesa Fire and Medical Department plans to ramp up its self-monitoring after it implements an electronic medical record. The Mesa Fire and Medical Department also emails or mails a Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey to patients after they receive CCU or CCS care at home. (The instrument is adapted from Hospital CAHPS.) From June to August 2015, the CCU/CCS teams responded to 1,468 calls and received 107 completed surveys. Though overwhelmingly positive, the responses are likely to be biased because the respondents self-selected to participate in the survey.

CCRI leaders have reported that program adaptations are driven more by data analysis than by staff input, and frontline staff have mixed impressions about the leaders' responsiveness to feedback. Most staff felt free to offer feedback but sometimes expressed frustration with a slow or minimal response from program leaders. Program leaders note that this sentiment among staff may be related to the fire department's chain of command. Feedback is communicated up the ranks, but staff may not know whether or how their leaders are responding. This was particularly the case with APPs and behavioral health clinicians, who were not familiar with the Mesa Fire and Medical Department's reporting structure and did not always know to whom their concerns should be expressed. Moreover, certain aspects of the program—such as the

"It's going to be a challenge to keep everybody up to speed on it, but we want continuous feedback. So as continuous as the change is, hopefully the feedback will be as continuous. And it has, they're not bashful. They pretty much tell you how it is."

— Mesa Fire and Medical Department leader

authority to prescribe controlled substances—are non-negotiable. From what we heard, feedback from frontline staff did not induce the Mesa Fire and Medical Department to change the program, but some staff felt that their suggested changes were forthcoming.

As noted, the police department’s interest in the program prompted the awardee to offer police officers a more direct way to dispatch CCSs. During the early phases of program implementation, fully equipped emergency units would respond to police requests and determine whether a CCS was appropriate. As police became more familiar with the types of patients that CCSs could effectively treat and refer, the Mesa Fire and Medical Department allowed them to request a CCS directly through dispatch. Police also educated their own members to prevent them from requesting CCSs inappropriately. One CCS team estimated that 60 percent of its calls originate with the police.

The awardee characterizes its partnership with IPC Healthcare as greatly facilitating its ability to launch the transitional care component. IPC Healthcare is working collaboratively with the fire department to begin offering transitional care services to patients with CHF after they are discharged from Mountain Vista Medical Center.

4. To what extent has the awardee begun to plan for or implement payment reforms?

As a public entity, the Mesa Fire and Medical Department seeks to recoup costs but not to earn a profit, and it expects this approach will facilitate its ability to finance the program after the cooperative agreement funding has ended.

In 2014, the city of Mesa passed an ordinance allowing the Mesa Fire and Medical Department to bill payers for CCU/CCS services,¹ although the department did not yet have a billing infrastructure in place. The Mesa Fire and Medical Department originally planned to submit claims for intentional denial as a way of tracking costs. However, the awardee reported that CMS recently clarified that the Mesa Fire and Medical Department could bill Medicare and Medicaid for reimbursement of billable services during the cooperative agreement. The Mesa Fire and Medical Department contracted with a third-party billing company to identify (1) which APP services are currently billable under the existing scope of practice regulations in Arizona and (2) what associated medical billing codes are necessary to build its billing infrastructure. As the awardee works through this complex task, it is also seeking partnerships with local behavioral health facilities that will provide it with a portion of capitated payments for patients transported to the facilities.

For the transitional care component, stakeholders agreed that sustaining the program past the cooperative agreement will require reimbursement. One administrator from a partner agency

¹ See <https://mesa.legistar.com/LegislationDetail.aspx?ID=1876762&GUID=644DFB4E-EBC4-42C6-90B1-5E1C53E8FD2B&Options=&Search=>.

commented that Medicare's transitional care billing code, which reimburses less than \$200, is not enough to recover costs associated with transportation, evaluation, management, and care coordination, suggesting that adequate reimbursement for providing a CHF patient with transitional care would be closer to \$500. To date, the Mesa Fire and Medical Department's partners reported dedicating about \$300,000 in-kind to the program, including building the software platform that will enable providers to communicate. The partners view this as an investment, anticipating that commercial payers will begin to offer reimbursement for transitional care services. Awardee leaders are negotiating with local payers to secure reimbursement, possibly through a bundled payment approach, and they described payers as cooperative, given the potential for cost savings. Mesa Fire and Medical Department leaders also expressed a willingness to bear some risk associated with bundled payments, an attitude that they believe has facilitated discussions with payers. The leaders envision a future in which municipal fire and medical departments are included in insurers' provider networks.

D. Impact evaluability assessment

After reviewing the information in program documents and from interviews with program staff, we conclude that a rigorous impact analysis of CCRI is feasible. The evaluation design will involve difference-in-differences estimation with matched comparison groups. Since the program targets two groups—the low-risk 911 callers and high-risk patients with CHF who were recently discharged from Mountain Vista Medical Center—we will conduct two impact analyses. Although CCUs are deployed to participants' homes in both program components, the services differ based on a participant's needs, particularly on whether he or she is a low-risk 911 caller or a high-risk patient recently discharged from the hospital. As such, these two components will be evaluated individually. For the low-risk 911 callers, we will choose comparison groups from communities that have medical care services as well as demographic and socioeconomic characteristics that are similar to those in Mesa. For high-risk patients discharged from the hospital, we will choose a comparison group from hospitals that are similar to Mountain Vista Medical Center in terms of the acuity of patients and the services offered. We will then match patients from these communities and hospitals to the treated program participants in Mesa in order to derive comparison groups that are similar in terms of medical, payer, and demographic information.

E. Next Steps

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact evaluation include identifying all Medicare and Medicaid beneficiaries in the treatment and comparison groups and comparing the baseline characteristics across those two groups. We will match the treatment and comparison groups on baseline characteristics and ensure that the two characteristics are sufficiently balanced across the two groups. We will then produce tables for the groups, showing descriptive statistics before and after matching. Next, we will create outcome and explanatory variables and produce initial impact estimates for the first one to two quarters of program operations, depending on data availability. We will describe our findings in future reports.

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APPENDIX B.20

MONTEFIORE MEDICAL CENTER

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REPORT

APPENDIX B.20

HCIA Round Two Evaluation: Montefiore Medical Center

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–September 17, 2015)

Successes

- Montefiore Medical Center launched its Behavioral Health Integration Program (BHIP) at seven primary care practices and met its enrollment targets. As of August 2015, the BHIP had 1,285 enrollees.
- Montefiore Medical Center contracted with the University of Washington for use of its patient registry and for conducting training webinars to support program implementation. Montefiore Medical Center also executed data use agreements (DUAs) with two of the three health plans it expects to engage as it develops a payment model to sustain the program after the award period.
- Despite initial hiring delays resulting from newly adopted administrative procedures, the awardee managed to hire all BHIP administrative and frontline staff during the first year of the program. In addition to training webinars provided by University of Washington faculty, BHIP staff received ongoing monthly training from program leaders.

Challenges and strategies to address them

- Montefiore Medical Center's rollout of a new electronic medical record (EMR) system at all primary care practices in May 2015 presented barriers to implementation. The training and learning period for the system took a significant amount of staff time. In addition, sites reduced the number of patient appointments during the transition, limiting the opportunity for program screening and enrollment. BHIP leaders developed strategies to maintain sufficient enrollment (for example, placing the behavioral health patient educator in the waiting area to ensure patients complete the behavioral health screening tool). Program leaders also worked with BHIP site staff to re-educate primary care staff on the program after the EMR rollout to ensure it remained a priority.
- Although primary care physicians strongly support the BHIP, many reported that limited time and competing priorities restricted engagement with the behavioral health team. BHIP site staff mitigated this by adapting their communication and engagement strategies to meet the needs and schedules of individual primary care physicians within each site.
- Staff reported some challenges engaging participants in the BHIP, including language and literacy barriers, stigma surrounding mental health treatment, and socioeconomic barriers such as poor access to transportation. Montefiore Medical Center is attempting to reduce these barriers by offering screening and treatment in participants' language when possible, promoting behavioral health care as a part of participants' overall health care, and connecting participants to needed community resources.

Lessons learned

- Program and site leaders' clear vision for the BHIP and hands-on guidance helped frontline staff implement the program as intended.
- Frontline staff highlighted collaboration, teamwork, and trust as key elements that generate buy-in and contribute to the program's success.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on September 17, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Behavioral Health Integration Program (BHIP), which is being implemented by Montefiore Medical Center. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Montefiore Medical Center's BHIP, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, and key informant interviews conducted during a recent visit to three BHIP sites. We also reviewed Montefiore Medical Center's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the BHIP, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of the BHIP's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

Montefiore Medical Center, a large tertiary care center in the Bronx, New York, is using its HCIA R2 funds to implement the BHIP in 7 of its 22 primary care sites. The awardee contracts with the University of Washington to use its patient registry to monitor the progress and outcomes of BHIP participants. The awardee also plans to contract with additional vendors for the program's telemedicine components. Faculty at the University of Washington also provide training webinars to staff at implementing sites.

Montefiore Medical Center rolled out the BHIP in two phases. The first phase started in February 2015, when three sites began implementation. The second phase started in August 2015, when four additional sites began implementation. The awardee expects the BHIP to reach 4,575 individuals who receive services from participating primary care sites and have depression, anxiety, or (for children and adolescents) attention deficit hyperactivity disorder (ADHD).

Montefiore Medical Center's BHIP centers on the collaborative care model, a measurement-based integrated care model. Under this model, all patients who visit the BHIP's primary care practices complete a self-reported screening tool to identify behavioral health symptoms. Primary care providers connect individuals who screen positive for one of the program's targeted conditions to a member of the site's behavioral health team (behavioral health patient educators, licensed clinical social workers, and part-time consulting psychiatrists). In addition, children, adolescents, and their parents can be referred to pediatric psychologists. Participants may choose to engage in any combination of short-term psychotherapy with the licensed clinical social worker or psychologist, psychiatric medication management with the psychiatrist, or telephone outreach from the behavioral health patient educator. The behavioral health team uses a patient registry to collect and monitor data on participants' progress in the program.

At each site, the psychiatrist consults with (1) the primary care physicians to support management of participants' psychiatric medication and (2) the behavioral health team to help identify participants' needs for behavioral health services. The behavioral health team conducts follow-up behavioral health screening to monitor participants' progress throughout the program.¹ Participants whose scores are not improving during the program are connected to the consulting psychiatrist for further diagnostic assessment and recommendations for next steps in treatment. During the second year of the BHIP, program leaders plan to introduce telemedicine tools (for example, conduct follow-up behavioral health telephone screenings through an interactive voice response program and offer health and wellness education through smartphone and tablet-based technology).

By the end of the three-year award period, Montefiore Medical Center intends to have achieved three goals:

- Increase in patient satisfaction
- Improvement in participants' behavioral health and chronic disease outcomes
- Net savings in cost of care for its patient population through fewer hospitalizations and emergency department (ED) visits

The awardee hypothesizes that primary care providers who work in concert with on-site behavioral health staff to measure and respond to participants' progress will be better able to meet participants' behavioral health needs. This improved access to behavioral health, integrated with primary care services, will lead to increased participant satisfaction, better physical and behavioral health outcomes, fewer hospitalizations, and lower costs. Other key characteristics are described in Table 1.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Montefiore Medical Center to the implementation and monitoring contractor covering the first year of the award (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and our visit to three BHIP sites from September 15 through 17, 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we visited the three primary care practices that began implementing the BHIP in February 2015 as part of the project's first phase of implementation. We interviewed

¹ Participants receive screening for depression, anxiety, or alcohol use based on the symptoms identified in their response to the initial screening tool.

members of the BHIP steering committee, site administrators, primary care providers, and behavioral health staff (behavioral health patient educators, licensed clinical social workers, and consulting psychiatrists) at each of the three sites.

Table 1. Montefiore Medical Center: BHIP characteristics at a glance

Program characteristic	Description
Purpose	The awardee, a large tertiary care center in the Bronx, New York, is implementing the BHIP in 7 of its 22 primary care sites.
Components	<ul style="list-style-type: none"> • Integrated behavioral health and primary care services (primary) • Patient registry to collect and monitor participants' progress (secondary) • Telemedicine tools to administer follow-up screenings and provide health and wellness education services to participants (secondary)
Target population	4,575 individuals who receive services from participating primary care sites and have depression, anxiety, or (for children and adolescents) ADHD
Theory of change/theory of action	The awardee hypothesizes that primary care providers who work in concert with on-site behavioral health staff to measure and respond to participants' progress will be better able to meet participants' behavioral health needs. This improved access to behavioral health, integrated with primary care services, will lead to increased participant satisfaction, better physical and behavioral health outcomes, fewer hospitalizations, and lower costs.
Payment model	The awardee plans to work with three health plans (Affinity, EmblemHealth, and Healthfirst) to develop and implement a case-based payment model to cover the BHIP's care management and behavioral health treatment services. The awardee expects to test this model in the third year of the award period.
Award amount	\$5,583,090
Launch date ^a	2/9/2015
Setting	Behavioral health and primary care staff implement the BHIP at seven primary care sites. Program leaders also plan to conduct some program activities through telemedicine tools (for example, conduct follow-up behavioral health telephone screenings through an interactive voice response program and offer health and wellness education through smartphone and tablet-based technology).
Market area	Urban
Market location	The Bronx, NY
Core outcomes	<ul style="list-style-type: none"> • Increase in patient satisfaction • Improvement in participants' behavioral health and chronic disease outcomes • Net savings in cost of care for patient population through fewer hospitalizations and ED visits

^aAfter a planning period, the awardee's program became operational as of this date.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, the team audio-recorded and transcribed all interviews. A team member received coding training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing

implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this narrative on Montefiore Medical Center's implementation experience.

C. Findings

1. How effectively has the program been implemented?

During the first year of the cooperative agreement, Montefiore Medical Center implemented the core elements of the BHIP as planned but modified some aspects of the program:

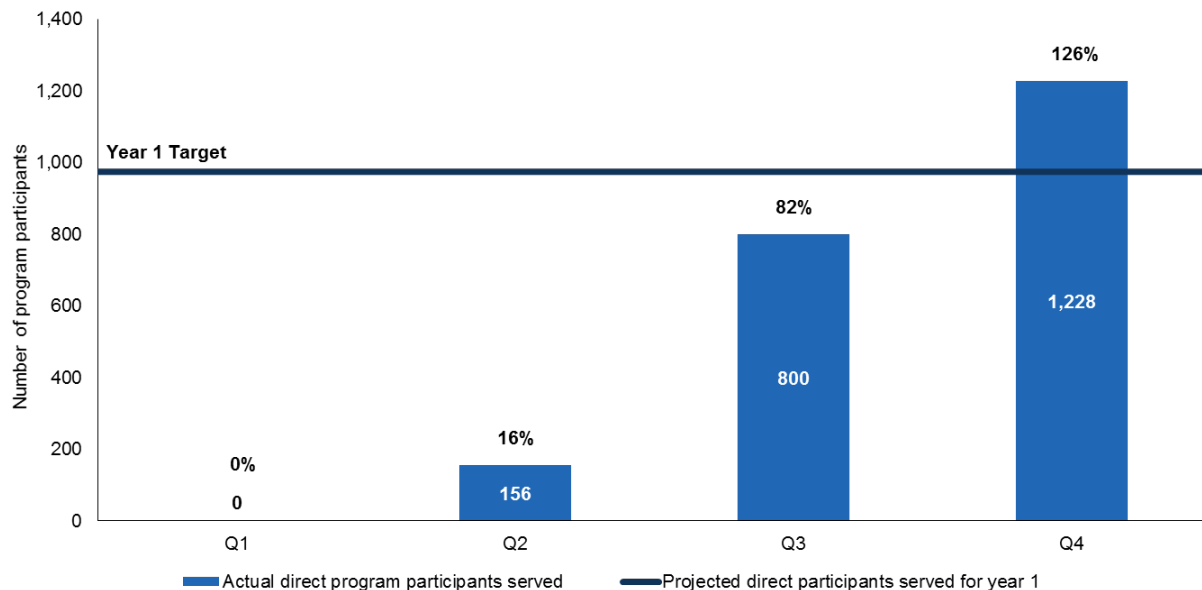
- Montefiore Medical Center adjusted its approach to targeting participants across the lifespan (pediatric, adult, and geriatric). The awardee had intended to offer the program to individuals of all ages at all participating sites. However, program staff found that applying the model to the pediatric population requires more on-site support than anticipated because they must engage not only the participant (the child) but also the participant's family, other caretakers, and school. Only one site currently is attempting to use the model with children and adolescents. Program administrators expect to meet their enrollment goal for children and adolescents through recruitment at the one site and are unsure whether they will expand the pediatric model to other sites as originally planned.
- Montefiore Medical Center stopped implementing the BHIP at one of its primary care sites because most of the individuals at this site were ineligible for enrollment because of the program's exclusion criteria (such as a diagnosis of dementia or significant hearing impairment that would limit a participant's ability to engage in telemedicine). Program leaders replaced this site with another primary care practice that serves a large geriatric population, including more participants expected to meet the BHIP inclusion criteria. The awardee also is considering expanding the program to additional primary care sites during the award period, in part to ensure the program continues to reach participants across the lifespan.

Montefiore Medical Center met its enrollment target for the first year of the program despite significant challenges posed by the rollout of a new EMR system across all of its primary care sites (described below in Section C.2). As of August 2015, Montefiore Medical Center enrolled 1,285 participants in the BHIP and provided HCIA R2-funded services to 1,228 participants (Figure 1). The awardee also estimates the number of patients who receive care from staff trained in the BHIP but not funded by HCIA R2 (that is, indirect participants). As of August 2015, the BHIP served approximately 1,259 indirect participants (Figure 1).

Montefiore Medical Center faced some hiring delays early in the implementation period. The awardee's new electronic personnel system delayed hiring of key administrative and frontline staff, including the director of the BHIP and behavioral health patient educators. Despite this challenge, Montefiore Medical Center successfully rolled out the BHIP at seven primary care sites during the first year of program operations. Montefiore Medical Center

implemented the program in two phases: three sites began implementing the BHIP in February 2015, and the remaining four sites rolled out the program in August 2015.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

The three components of the BHIP are closely linked. Although we are distinguishing between these components for evaluation purposes, the program staff consider them part of an integrated program. As a result, we first describe the program components, then discuss key program facilitators, and then identify barriers and corresponding solutions. We address the question above in this manner because the facilitators and barriers affect all components.

a. Program components

Primary component: integrated behavioral health and primary care services. The BHIP integrates a behavioral health team into each primary care site to provide on-site behavioral health screening, assessment, engagement, and treatment.

- Behavioral health patient educators conduct between-appointment telephone outreach to keep participants actively engaged in their own care. For example, behavioral health patient educators follow up on participants' treatment plans, remind them about upcoming appointments, and administer follow-up behavioral health screenings to monitor their progress.
- Licensed clinical social workers conduct psychosocial assessments and provide short-term psychotherapy (problem-solving therapy and motivational interviewing) and connect participants to social and community resources such as housing and transportation.
- Consulting psychiatrists support the behavioral health staff and conduct case consultations to improve primary care providers' ability to manage participants' psychiatric medication. The psychiatrists also provide direct, face-to-face consultation for patients who do not improve in the program or for those with medical complexity.

The behavioral health team meets weekly to discuss participants' treatment plans and coordinates care with the sites' primary care physicians. Behavioral health staff contact participants at least monthly, increasing this contact according to symptom severity. Participants who require longer-term psychiatric or mental health care are referred to other providers in the community but remain enrolled in the program and receive follow-up telephone outreach from the behavioral health patient educator for as long as their behavioral health screenings indicate a need.

Program staff receive a variety of training to support program implementation. BHIP leaders hold monthly meetings with all behavioral health patient educators and licensed clinical social workers to provide ongoing training on the program's protocols, behavioral health treatment approaches, and participant-engagement strategies. Program leaders also hold monthly case conferences with each site's behavioral health teams, including consulting psychiatrists. In addition, faculty from the University of Washington lead a series of webinars for program staff, including sessions customized for specific roles, such as primary care physicians and site administrators.

Secondary component: health information technology. Montefiore Medical Center is contracting with the University of Washington for use of its patient registry, which allows staff to closely track participants' progress and outcomes, and to step up the level of care when needed. For example, before each behavioral health team meeting, patient educators use the registry to identify participants whose behavioral health screening scores have not improved and use this information to inform team discussion during the meeting. The patient registry also allows the behavioral health team to review the participants' screening scores over time and to track the program's contact with participants. Program leaders expect to integrate the patient registry data collection fields into the awardee's new EMR system by the end of the award period to support ongoing collection and monitoring of participants' behavioral health screening data.

Secondary component: telemedicine. In Year 2, BHIP leaders plan to integrate telemedicine tools into routine care. For example, they expect to introduce interactive voice response technology for administering behavioral health screenings to participants by telephone between visits. Currently, the behavioral health patient educators administer these screenings by phone, which requires a significant amount of time. The technology would free up patient educators to focus more on engaging participants and following up on their needs. In addition, through their previous experience implementing depression screening in primary care sites, program leaders found that having staff administer the behavioral health screenings can affect how participants decide to respond to the questions. For example, one program leader recalled that at one site participating in this earlier initiative, positive screening rates on the depression scale nearly tripled (from approximately 4 percent to 12 percent) when the site switched from staff-administered to self-administered screening tools. The hope is that using an interactive voice response technology to administer follow-up screenings will result in more reliable responses. Program leaders also plan to launch a smartphone and tablet application to provide participants with health and wellness coaching and educational materials, and may offer a video consultation option to connect participants to behavioral health staff.

b. Facilitators

Several factors facilitated the primary care sites' implementation of the BHIP:

- All sites in the BHIP's first phase of implementation have some experience integrating behavioral health services into primary care.** All sites we visited had integrated co-located behavioral health staff into their practice at some point in the past; however, these staff operated within a more traditional behavioral health model (that is, providing long-term, stand-alone psychotherapy and psychiatric treatment rather than short-term treatment in close consultation with primary care physicians). In recent years, two of the sites had also implemented a program model similar to the BHIP under New York State's Collaborative Care Initiative, including implementing universal depression screening and using a patient registry to provide measurement-based care. As a result, most sites we visited had some workflow processes in place to manage these elements of the program.
- Ongoing support from program and site leaders helped frontline staff implement the program model as intended.** BHIP leaders clearly defined program protocols and staff responsibilities and provided hands-on support to staff at each site to integrate these roles and protocols into the practice workflow. For example, frontline staff reported that at least one BHIP leader usually attends sites' weekly behavioral health team meetings and that the BHIP project director and project manager are available to provide support by phone or email when needed. In addition to clear guidance on the program's protocols, goals, and expectations, program leaders and frontline staff

"You have to get that core group of people that really believe in it, and then you can work out all the other issues. That's something that really started from the very beginning. There was a group of people who said, 'This is really important and with everything else going on, we're going to keep this going and keep it moving.' And it's worked."

— Site administrator

highlighted support from the site administrator and medical director as important to implementing the model. Many staff described the primary care sites as experiencing “constant change,” with other initiatives vying for staff time and energy, such as preparation for upgrading sites’ patient-centered medical home (PCMH) recognition. Supportive site leaders helped to ensure that the BHIP remained a priority. For example, behavioral health staff at one site mentioned that the site’s PCMH consultant integrates the BHIP into the agenda for every PCMH planning meeting to ensure it is considered part of the workflow. As a result, most staff reported that the BHIP is truly integrated into participating sites; several primary care physicians use the word “seamless” to describe program implementation.

- **Nearly all frontline staff noted that collaboration, teamwork, and trust contribute substantially to the program’s success.** Behavioral health staff at each site work closely

“We have a lot of competing responsibilities as docs. We get stretched. So when that responsibility for coordinating care can be taken by somebody that you trust, it feels like a bit of weight off of my back it allows me to feel like my patients are being well cared for.”

— Primary care physician

with one another, and with the primary care staff, to coordinate care for program participants. One primary care physician commented, “I think the feeling that the social worker wants to communicate to me what’s going on as part of a collaborative team effort has been a really important and strong part of the program.” Frontline staff highlighted a

variety of factors that create strong teams, such as the patient educators’ energetic personalities, the behavioral health staff’s flexibility in working with primary care providers, and mutual commitment to providing high quality care to program participants. Program staff also described the presence of the behavioral health team in the primary care setting as conducive to teamwork. One physician explained that having the behavioral health staff attend huddles and staff meetings helps to build the sense of collaboration, noting that “part of making any sort of collaborative effort successful is that people have to first know each other ... it’s hard to trust someone you don’t even know.”

- **Primary care physicians support and promote the program.** Most primary care

“There’s not much that the physician has to do. Everything is really just in front of you. I am just the facilitator. I’m there to say to the patient ‘Your mood and your depression is important. I’d like you to meet with [the behavioral health patient educator]. She’s going to help you and we’re going to communicate.’ That’s all it is; and that’s a lot easier than sitting there and listening to 30 years of trauma.”

— Primary care physician

physicians voiced strong support for the program and described the ways it has improved their own work experience. Physicians said they appreciate the program because they see a clear need for behavioral health services, they find the program easy to use, and it eases their mind to know that someone is there to help patients with mental

health and social challenges that physicians often cannot fully address. Other program staff said that support from primary care providers is critical to helping participants understand and be open to receiving behavioral health services. As one patient educator put it, “The fact

that the doctors understand and, I would even say, believe in the program makes it so much easier and more successful because they will sell the program to their patients.”

c. Barriers and solutions

BHIP staff identified some implementation challenges and described strategies to address them:

- **Montefiore Medical Center’s transition to a new EMR system posed a barrier to enrolling participants and implementing the program.** All participating primary care sites transitioned to a new EMR system in May 2015. During the transition, sites temporarily reduced by at least 25 percent the number of patients scheduled for primary care appointments, thereby reducing the number of patients who could be screened and potentially enrolled in the BHIP. Program leaders worked with BHIP staff at each site to develop strategies to maintain sufficient enrollment (for example, placing the behavioral health patient educator in the waiting area to give the behavioral health screening tool to patients). The EMR rollout also posed a barrier to BHIP implementation because it added another burden to the primary care staff’s workload. The EMR rollout was most challenging at the site with the least experience implementing similar programs. BHIP leaders worked with BHIP staff at this site to relaunch the program (holding an additional kickoff meeting for primary care site staff and reaching out to primary care physicians to engage them in the program). Staff at other sites also re-educated primary care staff on the program after the EMR rollout to ensure it remained a priority.
- **Although most participants are receptive to the program, program staff reported barriers to engaging some participants.** Frontline staff noted that some participants were hesitant to engage in the BHIP due to the stigma associated with mental health treatment. Some also have trouble understanding the screening tool due to literacy or language barriers and are unable to respond accurately to the questions. Furthermore, significant socioeconomic barriers such as unstable housing and poor access to transportation to have made it difficult for participants at some sites to engage in treatment.

The program helps to mitigate these barriers in several ways. To reduce stigma, behavioral health staff often frame the program and behavioral health treatment as one part of the care necessary to manage the participant’s overall health. Program staff also suggested that participants feel more comfortable accepting and engaging in behavioral health care because it is introduced to them by their primary care physician in a familiar setting. The program attempts to limit language and cultural barriers to screening and engagement by offering the screening in multiple languages and providing translation services when needed; the screenings are currently available in English and Spanish, and BHIP leaders are in the process of having them translated into five other languages. In addition, many BHIP site staff and existing primary care providers speak Spanish, which staff highlighted as critically important to engaging participants at most sites. Finally, the program’s between-visit telephone outreach and on-site social work resources help to reduce other barriers to engaging in care by helping participants connect to needed

resources (for example, behavioral health staff can help arrange transportation to appointments, find child care, or reschedule appointments).

5. Primary care physicians cited a lack of protected time and increasing tasks as barriers to maximizing their engagement with the behavioral health team.

“Each site is a different beast, but each site is very workable into this model. Part of what I try to convey to [behavioral health staff] is that this is something they can own. They can develop and bring their own style into this model.”

— Program leader

Nearly all primary care providers noted limited time and frequently changing expectations for primary care appointments as a limitation to their engagement with the behavioral health team. To address this, program leaders work with behavioral health staff at each site to adapt the model to physicians’ preferences and schedules. For example, at some sites,

physicians often stop by the psychiatrists’ office when they have free time to discuss participants’ cases. At another site, the psychiatrist provides nearly all consultation to primary care physicians through the EMR system. Behavioral health staff at all sites also invite physicians to their weekly team meetings but, recognizing many cannot attend, the behavioral health teams communicate with physicians using EMR notes to inform them of follow-up activities planned for the participant, or to discuss recommendations. The behavioral health staff also adapts to each primary care physician’s style of referral; some physicians prefer to introduce the participant to the patient educator or licensed clinical social worker for a “warm hand-off.” Others call the behavioral health staff to alert them to a new referral, or they ask the participant to make an appointment through the front desk. Patient educators provide additional support by preventing referrals from “falling through the cracks.” After the patient completes the initial self-administered screening in the waiting room and the primary care physician receives the screening information, the patient educator reviews each behavioral health screening to ensure that all eligible individuals are entered into the patient registry and receive follow-up outreach.

In coming months, BHIP staff will continue to receive ongoing training and support from program leaders and the University of Washington faculty. Program leaders expect to contract with telemedicine vendors and begin to roll out interactive, patient-facing technology during Year 2 of the program. Program staff may begin mining EMR data to identify potentially eligible patients if the universal screening at primary care sites fails to yield sufficient enrollment. BHIP staff will also introduce promotional materials to educate patients on the program and its services. Finally, program leaders hope to finalize its contracts with all partner health plans and develop a payment model to cover the program’s staff and services.

3. How do the awardee and implementing sites make decisions about program-related changes?

Program staff are working to continually improve the BHIP and the care for individual participants by using data collected in the program’s patient registry. BHIP leaders monitor sites’ performance through the patient registry and feed data back to the sites by meeting with site

administrators, medical directors, and behavioral health teams at least quarterly. Program leaders report that these data allow them to “target” their implementation support to particular sites or challenging metrics. For example, BHIP leaders track the length of time between the point at which individuals are enrolled in the program and the first time they engage with behavioral health staff. Initially, behavioral health staff were engaging participants within eight weeks of enrollment, on average; BHIP leaders worked with program staff to improve this metric. As of September 2015, program staff engaged participants within approximately four weeks of enrollment, on average; the program staff hope to continue to reduce the time from enrollment to engagement. Program leaders also monitor the percentage of patients who receive follow-up at least monthly, the average duration of participants’ engagement in the program, and the percentage of follow-up communications conducted by telephone.

As of September 2015, BHIP leaders were developing opportunities to solicit feedback from external stakeholders. There are plans to facilitate meetings with a consumer committee and an external advisory board to inform ongoing program implementation, but none had been held at the time of the site visit. We will document how the program uses input from these stakeholders in future reports.

4. To what extent have the awardee and the implementing sites begun to plan for or implement payment reforms?

Montefiore Medical Center is working with three health plans (Affinity, EmblemHealth, and Healthfirst) to develop and implement a case-based payment model to cover the BHIP’s care management and behavioral health treatment services. As of September 2015, these three health plans covered approximately half of the participants enrolled in the BHIP; program leaders noted that they hope to increase the percentage of participants covered by participating plans as they expand enrollment at participating sites. At the time of the site visit, program leaders reported that the payment model was still in development. They expect that sites will receive an initial payment for each eligible program participant; additional payments are likely to vary with a participants’ treatment. The awardee’s intent is that this payment model will allow implementing sites to retain BHIP staff (a licensed clinical social worker, a behavioral health patient educator, a part-time consulting psychiatrist, and—for children, adolescents, and their parents—pediatric psychologists) after the cooperative agreement ends. As part of this model, Montefiore Medical Center also plans to tie payment to the implementing sites’ performance based on participants’ outcomes. Program leaders noted that the payment model will likely have to operate differently for the pediatric population. They will use program data to further refine the details of the two payment models over the course of the cooperative agreement and hope to test the payment model in the third year of the program.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we conclude that a rigorous impact analysis is feasible. We recommended a difference-in-differences design, which allows us to estimate the differential effect of the BHIP on a given outcome of interest between a treatment and a matched comparison group of participants using

the pre-intervention period as reference (that is, the change in the outcomes from the pre- to the post-intervention period for participants exposed to the BHIP compared to the change for a similar group not exposed to the BHIP). We will acquire two years of pre-intervention Medicaid data directly from New York State and Medicare data from CMS for both the treatment and the comparison group. Given that Montefiore Medical Center will implement the BHIP in a subset of its primary care practices, we will use these data to identify treatment participants from the primary care practices participating in the BHIP and comparison patients from Montefiore Medical Center's remaining non-BHIP primary care practices (all of which are located in the Bronx). The data provided by the awardee (that is, BHIP-specific data from its EMR and patient registry) will supplement the claims data. The anticipated sample size is large enough to suggest that we will be able to detect some of the program effects that the awardee expects to see. For example, we will be able to detect effects as small as 10 percent for key outcomes, such as the likelihood of hospitalization, the number of all-cause hospitalizations, the number of ED visits, and the total health care costs for Medicaid and Medicare fee-for-service beneficiaries. We will also be able to detect an effect of 20 percent for the 30-day unplanned readmission rate.

E. Next steps

We look forward to continuing to work with Montefiore Medical Center for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

We recently executed a BAA/MOU with Montefiore Medical Center, and the awardee has already delivered an initial set of identifiable data for currently enrolled beneficiaries. As we move forward with acquiring Medicaid and Medicare claims data, our next steps include linking these sets of claims data to the awardee's data, which will allow for the identification of potential comparison patients. We will then clean and process the data files. After we have identified an appropriate and feasible analytic strategy, we will conduct baseline analyses to examine the equivalence of the two groups. These analyses will include developing descriptive statistics that will be reported in forthcoming quarterly reports. These preliminary analyses will also permit us to determine the quality of the data in terms of, for example, missing data and measurement error, and explore propensity score and matching techniques that would maximize balance and

overlapping between the treatment and comparison groups. As time goes on, we will advance from descriptive statistics to patterns and time trends, and, depending on data availability, will generate preliminary impact estimates and possibly subgroup analyses. We will discuss these findings in future reports.

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APPENDIX B.21

NATIONAL ASSOCIATION OF CHILDREN'S HOSPITALS
AND RELATED INSTITUTIONS / **CHILDREN'S HOSPITAL
ASSOCIATION**

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REPORT

APPENDIX B.21

HCIA Round Two Evaluation: National Association of Children's Hospitals and Related Institutions/ Children's Hospital Association

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FINDINGS AT A GLANCE (SEPTEMBER 1, 2014–NOVEMBER 13, 2015)

Successes

- Developing a large learning collaborative: The National Association of Children's Hospitals and Related Institutions and the Children's Hospital Association have engaged 10 children's hospitals, 9 hospital-based clinics, and 40 primary care practices in efforts to improve care for children with medical complexity (CMC).
- Building processes for care coordination and management: The National Association of Children's Hospitals has developed a "change package" of care processes for CMC; participating hospitals and practices are integrating these processes into routine clinical care.

Challenges and strategies to address them

- Enrollment: Participating hospitals spent much of the first year of the cooperative agreement hiring staff and recruiting the practices needed to enroll participants in the program. To facilitate enrollment, hospitals have limited formal consent processes to the one-third of participants' families who will receive surveys, through which they will describe their experiences with the care they have received.
- Data acquisition and analysis: The National Association of Children's Hospitals and participating hospitals also spent much of the first year negotiating data sharing agreements with state Medicaid agencies and Medicaid managed care organizations. The program used a third party to collate Medicaid data to address the complexity and volume of data across multiple payers.

Lessons learned

- Acquiring Medicaid claims data and hiring new staff within hospitals is time-consuming, suggesting that a pre-award planning period could be beneficial.
- Some payers are interested in payment reform but are reluctant to consider models applicable to only a small population or to specific provider groups; some payers are reluctant to consider any alternative payment models for the target population.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on November 13, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings;

(2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Coordinating All Resources Effectively (CARE) program, which is being implemented by the National Association of Children's Hospitals and Related Institutions and the Children's Hospital Association. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the CARE program from the National Association of Children's Hospitals, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during recent site visits with the National Association of Children's Hospitals, four hospital sites, and participating primary care practices (PCPs); and a review of awardee reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the National Association of Children's Hospitals program, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of the impact evaluability assessment for the National Association of Children's Hospitals and identify next steps in our evaluation.

A. Introduction

The National Association of Children's Hospitals is using its HCIA R2 funds to implement the CARE program. The program includes components of (1) care management and coordination, (2) practice-based quality improvement and transformation (at both hospital-based outpatient programs for children with medical complexity [CMC] and collaborating PCP sites), and (3) provider and staff education and training. By implementing the CARE program, the awardee seeks to achieve three primary goals: (1) improve the experience of care for CMC and their caregivers through the duration of the program, (2) reduce family stress related to health care by 10 percent by November 2016, and (3) reduce overall medical expenditures by 6.8 percent by August 2017. Other key characteristics of the CARE program are described in Table 1.

The care program targets CMC, defined broadly as children with the most complex chronic conditions—typically involving multiple organ systems and requiring many specialist health care providers. For the purposes of the program, CMC are defined specifically as children classified by the 3m clinical risk group (CRG) software into categories 5b, 6, 7, 8, or 9 using billing or claims data. These categories encompass children with lifelong chronic conditions, complex chronic conditions, and malignancies. Although measurement approaches vary, CMC account for nearly 6 percent of Medicaid enrollment and 34 percent of total spending in Medicaid.¹ Historically, a number of hospital-based CMC programs arose because many PCP providers expressed a lack of time and capacity to provide the care management and coordination needed by these children and their families and because traditional payment models did not provide incentives to provide these additional services in primary care settings. Most individual PCPS are

¹ Berry J.G., M. Hall, J. Neff, D. Goodman, E. Cohen, R. Agrawal, D. Kuo, and C. Feudtner. "Children with Medical Complexity and Medicaid: Spending and Cost Savings." *Health Affairs*, vol. 33, no. 12, December 2014, pp. 2199–2206.

likely to care for no more than a few dozen CMC; even large PCPS will include only a few hundred CMC. The small numbers limit the ability of providers and practices to dedicate substantial resources to this high-need population.

The National Association of Children's Hospitals hypothesizes that enhancing care management and coordination, increasing family engagement, and transforming some of the ways PCPs provide care for CMC will lead to better care experiences, reduced family stress, and reduced medical expenditures for CMC. To reach these goals, the National Association of Children's Hospitals is working with 10 children's hospitals in seven states and the District of Columbia:

1. Mattel Children's Hospital, Los Angeles, California
2. Lucile Packard Children's Hospital, Palo Alto, California
3. Children's Hospital Colorado, Aurora, Colorado
4. St. Joseph's Children's Hospital, Tampa, Florida
5. Wolfson Children's Hospital, Jacksonville, Florida
6. Children's Mercy Hospital and Clinics, Kansas City, Missouri
7. Cincinnati Children's Hospital Medical Center, Ohio
8. The Children's Hospital of Philadelphia, Pennsylvania
9. Cook Children's Health Care System, Fort Worth, Texas
10. Children's National Medical Center, Washington, District of Columbia

Each hospital is partnering with three to six PCPs. Across the 10 participating hospitals, approximately 40 PCPs and 9 hospital-based CMC practices are participating. The practices are a mix of hospital-based practices focused on CMC and hospital- and community-based PCPs. In most PCPs, only a small number of children will be CMC.

Table 1. National Association of Children's Hospitals: CARE characteristics at a glance

Program characteristic	Description
Purpose	The National Association of Children's Hospitals and Related Institutions (NACHRI) seeks to achieve three primary goals: (1) improve the experience of care for children with medical complexity (CMC) and their caregivers through the duration of the program, (2) reduce family stress related to health care by 10 percent by November 2016, and (3) reduce overall medical expenditures by 6.8 percent by August 2017.
Components	<ul style="list-style-type: none"> Care management and care coordination (primary): Provided to all participants and their caregivers through collaboration among hospital-based staff, hospital- and practice-based care coordinators, and staff in collaborating PCP sites Practice-based quality improvement and transformation (medical home) (primary): Support for up to six PCPs per hospital site to transform care processes for CMC consistent with the principles of the medical home Education and training (secondary): Learning collaborative for hospitals and practices based on The Breakthrough Series from the Institute for Healthcare Improvement
Target population	CMC are defined as children classified into the 3M CRG software categories 5b, 6, 7, 8, or 9 using billing or claims data. These categories encompass children with lifelong chronic conditions, complex chronic conditions, and malignancies.
Theory of change/theory of action	NACHRI hypothesizes that improved care management and coordination, heightened family engagement, and practice-based quality improvement and transformation will lead to better care experiences, reduced family stress, and reduced costs of providing health care to CMC.
Payment model	Shared savings, fee-for-service, per capita care management payment, bundled payment, value-based purchasing Unique to each implementing hospital
Award amount	\$23,198,916
Launch date ^a	5/1/2015
Setting	Hospital and provider based
Market area	Urban, suburban
Market location	California, Colorado, District of Columbia, Florida, Missouri, Ohio, Pennsylvania, Texas
Core outcomes	<ul style="list-style-type: none"> Better care: Improve patient and caregiver experience Healthier people: 10% reduction in family stress related to care by August 2017 Smarter spending: 6.8% reduction in all medical expenditures by August 2017

^a After a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by the National Association of Children's Hospitals to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and during our site visits with the National Association of Children's Hospitals and four participating hospitals (Table 2). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four

quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

Table 2. Site visit schedule

Site	Date	Type of meeting
NACHRI	October 6, 2015	Virtual
Children's Mercy Hospital, Kansas City, Missouri	October 7–8, 2015	Virtual
Children's Hospital of Philadelphia	October 29–30, 2015	Virtual
Children's Hospital Colorado, Aurora, Colorado	November 9–11, 2015	In person
Wolfson Children's Hospital, Jacksonville, Florida	November 12–13, 2015	Virtual

During our site visit, we interviewed program leaders at the National Association of Children's Hospitals; for the four hospitals, we interviewed hospital leaders, frontline staff, and participating PCP staff.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. Several research analysts received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this narrative on the awardee's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Early delays affected enrollment, but the National Association of Children's Hospitals implemented the program without any major design changes. Enrollment was delayed by a number of factors, including the process of negotiating for payer data, receiving approval from four separate institutional review boards (IRBs), and recruiting PCPs. The National Association of Children's Hospitals and the sites limited eligibility for enrollment to those CMC who were enrolled with a payer who had entered into a data sharing agreement. Despite many sites having preliminary commitments from payers prior to the award, negotiations for data sharing took the majority of the first year of the award for most sites due to concerns from payers, particularly around access to cost data potentially leading to anticompetitive advantages for sites. Children were not enrolled until data sharing agreements were in place.

In addition, the National Association of Children's Hospitals had to work with each hospital to receive IRB approval and establish sub-recipient agreements. Although the National Association of Children's Hospitals established a centralized IRB for use across all of the hospital sites, some hospitals required local IRB approval, resulting in delays related to creating separate submissions for the IRBs and the time frames for review. The awardee had originally

planned to attempt to survey all participating families, but the IRBs required formal consent from all participating families who would receive patient care experience surveys. Consequently, to limit burden on families and the time spent in the formal consent process for implementing sites, the awardee chose to offer the survey to a random sample of only one-third of participants.

Because of these delays, the National Association of Children's Hospitals did not begin enrolling participants until May 1, 2015. As of August 31, 2015, the awardee had enrolled 1,343 participants—24 percent of its Year 1 target of 5,681 participants (Figure 1). Two hospitals had exceeded their Year 1 enrollment goals, but the remaining eight were at or below enrollment targets. During interviews conducted as part of our site visits, several hospital leaders noted that the enrollment targets originally provided by the participating hospitals for the awardee application were based on incomplete or outdated data, or included the entire population of CMC for the hospital regardless of payer source, leading to enrollment targets that might not have been realistic.

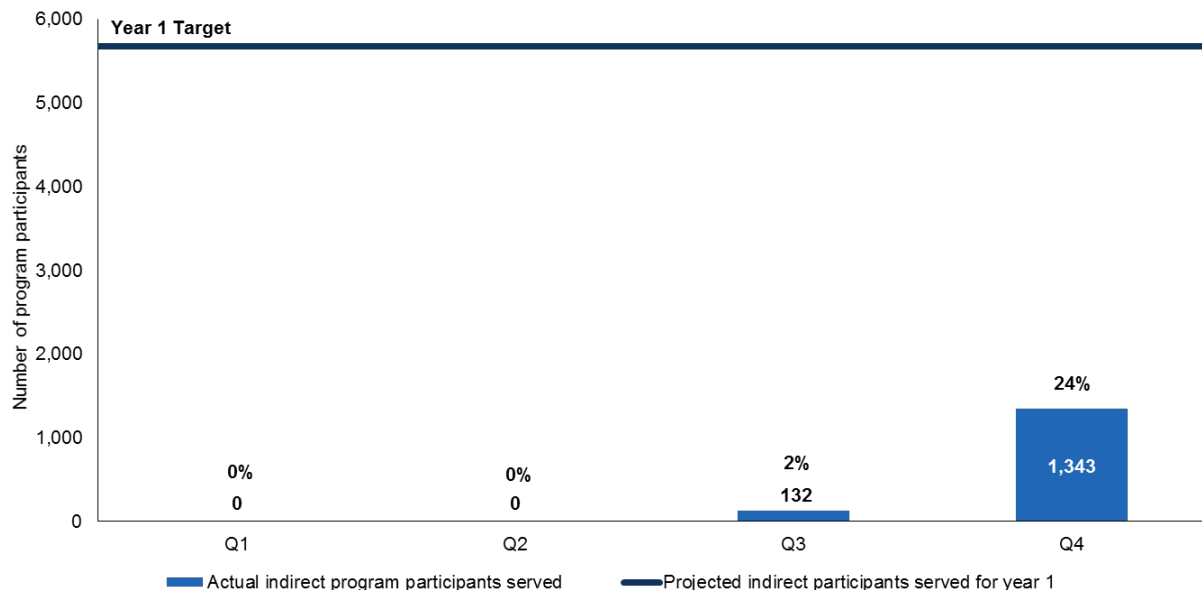
To increase enrollment, the National Association of Children's Hospitals asked each hospital project director to present an enrollment plan by October 2015. These plans included the following strategies:

- Engage specialists to allow consents immediately after specialty appointments
- Resubmit an IRB application to acquire consents only from participants involved in the survey sample
- Train care managers on the process to consent and enroll participants
- Maintain a dedicated staff member who will collect consents, send letters, and make follow-up calls
- Leverage an in-person interpreter for getting consents from Spanish-speaking patients
- Improve processes to gain consent from caregivers during inpatient stays
- Distribute consent letter via mail combined with a follow-up call
- Increase recruitment opportunities by proactively scheduling well-child visits

The National Association of Children's Hospitals also facilitated brainstorming and the sharing of best practices across the hospitals and, in September 2015, began sending hospital leaders a comparative dashboard that includes a report of enrollment by hospital sites.

Some sites faced challenges in recruiting PCPs to participate. This was more common among sites that did not have their own primary care network. To address this issue, sites have sought to connect to practices by collaborating with accountable care entities, provider networks, and other provider affiliations. This has taken longer than anticipated for several sites but was progressing at the time of our site visit.

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters; September 2014–August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter. NACHRI does not have direct program participants.

The CARE program has been implemented without major design changes, but there has been variation in how the hospitals implement program components. Hospital and practice leaders described the need to adapt CARE program processes to the resources and needs of practice sites. For example, some hospitals and practices have delayed implementation of comprehensive care plans until they could be incorporated into the hospital or practice's electronic medical records (EMRs). Leaders at the National Association of Children's Hospitals anticipated these differences and have remained flexible in their approaches to engaging hospitals. Hospitals vary in their histories and experiences with CMC programs, as well as in their relationships with local PCPs. For example, one hospital will include PCPs in distant rural communities and will use telemedicine to collaborate with providers and with participants' families beginning in the second year of the award.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

The CARE program consists of two primary components at each participating hospital: (1) care management and coordination and (2) practice-based quality improvement and transformation (that is, adopting or enhancing processes similar to the medical home). In

addition, the program includes a secondary component focused on education and training for staff at participating hospital and practice sites.

The components of the program are closely linked. Although we are distinguishing between the components for evaluation purposes, the program staff consider them part of an integrated program. As a result, the key program facilitators and barriers that we discuss below affect all three components. In this section, we describe the components, followed by a description of the facilitators of and barriers to their implementation.

Primary component: care management and coordination. At the time of our site visit, care coordination teams based either at participating hospitals or associated practices were just beginning to provide services to children and families. These teams include nurse coordinators and other staff, such as social workers, medical assistants, or patient navigators. The teams' specific composition and start date varies across hospitals and practices.

Eventually, all participants will receive services from a care coordination team. These services will include the following:

- Conducting a comprehensive initial assessment of care needs and family strengths
- Identifying a specific care team for the child with input from the family
- Developing a care plan with goals shared by the family and care team and an individualized access plan to help the family identify whom to contact for various care needs
- Providing access to a member of the care team 24 hours a day, seven days a week, and creating access plans
- Helping the family develop self-management skills
- Providing transition planning and care coordination if a child moves between a hospital-based outpatient CMC program and a PCP, or is comanaged between them
- Engaging with the family and care team on an ongoing basis to identify the most effective and efficient combinations of community-based primary care and hospital-based services

Primary component: practice-based quality improvement and transformation (medical home). The program will support hospital-based CMC programs and up to six PCPs per hospital site to transform care processes for CMC consistent with the principles of the medical home. Each hospital will hire and train a practice facilitator to help the practices develop quality improvement teams, implement changes in care processes to support the needs of CMC and their caregivers, and engage caregiver representatives to inform changes. Primary care providers will be able to consult with providers in specialized, hospital-based CMC programs.

The program leaders have developed a package of “change concepts” for sites and practices that consists of processes important in the care of CMC. The processes include (1) a patient registry for CMC, (2) dynamic care teams, (3) access plans, (4) care planning, and (5) transitions of care. For each of these processes, the National Association of Children's Hospitals developed

guiding principles and common core elements of change, and suggested actions and quality measures. A patient registry is defined as an electronic or paper list of children enrolled in the program with key demographic and program-related information that is reviewed and updated at regular intervals. A dynamic care team is the group of health care, community, and educational providers involved in the child's care; membership on the team is a shared decision among parents, children, and providers. Access plans describe how and when to contact the appropriate clinical provider for health care issues. A care plan is a standardized approach with standardized documents developed between the family and providers that summarize the child's clinical conditions, approaches to management, and short- and long-term goals. The concept of transitions of care refers to a standardized approach to changing care settings for CMC, particularly from a hospital-based complex care clinic to a PCP.

The five change concepts have been implemented in a staged approach. The awardee asked sites to implement a registry and one other change concept of the sites' choice by April 2015, followed by two more change concepts of their choice by June 2015, and the final concept by August 2015. Leaders at the National Association of Children's Hospitals noted that they have received feedback from sites that this timeline was often unrealistic, particularly for implementing care planning and transitions of care.

Secondary component: education and training. Leaders at the National Association of Children's Hospitals are running a learning collaborative for the participating children's hospitals and practices based on The Breakthrough Series from the Institute for Healthcare Improvement. The program leaders support in-person meetings (two in Year 1, two in Year 2, and one in Year 3) for teams of six individuals from each hospital and participating practices. In addition, the learning collaborative offers virtual learning sessions, calls to discuss quality improvement challenges, monthly calls to share data, and web-based discussion lists for staff from the hospital and PCP sites. Each hospital's team includes a practice facilitator—an individual who has expertise working with PCPs on quality improvement or practice transformation—who will help participating practices establish and maintain quality improvement teams to transform care processes to meet the needs of CMC. The facilitators will be trained to help practice staff translate into practice the concepts from the learning collaborative. In-person learning collaborative meetings occurred in March and November 2015. In April 2015, the National Association of Children's Hospitals launched an extranet that allows participating hospitals and practices to post quality improvement data into a web portal for overall program, hospital-specific, and practice-specific analyses.

Program leaders, participating hospital and practice leaders, and frontline staff identified several factors that facilitated the program, including (1) hospital and practice experience with quality improvement, (2) the resources available from a large children's hospital, (3) learning collaborative activities, (4) complementary local and state programs, and (5) support from organization leaders. First, hospital and practice leaders and staff described leveraging experience with prior quality improvement efforts to communicate the goals of the program and tailor program processes to their specific local context. For example, a provider at a participating practice described how the program was introduced through an

existing quality improvement committee and the measures were being incorporated into ongoing quality measurement.

Second, hospital and practice staff discussed how the resources available in a large children's hospital supported multiple aspects of the program. For example, interviewees described accessing assistance from existing hospital programs in care coordination, social work, patient navigation, medical-legal partnerships, quality improvement, and research and data analytics to develop materials and processes for the CARE program.

Third, hospital leaders and program and practice staff described the CARE program's learning collaborative as supportive to implementation. Regularly scheduled webinars allowed program leaders to routinely communicate with participating hospitals, present program goals and processes, and share presentations from experts. Program leaders and staff used additional "huddle" calls to support problem solving and idea sharing between hospital and practice sites. Although most interviewees said these webinars and calls were helpful, some frontline staff expressed concern about the time commitment and a lack of specificity of the content for their roles.

Fourth, several hospital and practice leaders indicated the importance of local and state programs that aligned with the goals of the CARE program. Examples included a state patient-centered medical home program and a community palliative care program for children. These programs provided additional direct or indirect resources to participating hospitals and practices to support the care of children.

Fifth, interviewees at all participating hospitals described ongoing support from organization leaders. At several hospitals, hospital and practice leaders viewed the CARE program activities as a foundation for broader care coordination and population health management initiatives.

Challenges to program implementation include (1) time-consuming staffing and program processes, (2) hospital-practice relationships, (3) integrating changes into EMRs, and (4) competing hospital and practice priorities. Leaders at several participating hospitals noted that it frequently takes 6 to 12 months to create new positions (such as care coordinators), post them, and then hire staff. As a result, participating hospitals were only approaching full staffing nearly a year after the cooperative agreement went into effect. Moreover, frontline staff from several hospitals and practices noted that care processes for the program were very time-consuming due to the comprehensiveness of the needs assessments and care plans and the complexity of the children's and their families' needs. These interviewees hoped that the upfront investment of time and creation of new tools would generate efficiencies in care later in the program.

Second, most participating hospitals do not own multiple community-based PCPs—a situation that forced them to develop new relationships with

"Just by taking care of the five [children] yesterday took nearly a whole eight-hour day. You multiply that to equate to the other 138 people—there's no way we would be able to do it and stay open and make money. What we're doing is we're starting a little at a time, we're developing our procedures and hopefully, then I can streamline it . . ."

— *Practice-based care coordinator*

practices to implement the program. Hospital leaders described how time-consuming it was to develop relationships with practices, explain the goals and requirements of the program, and enter into formal contractual relationships. Some participating hospitals tried to address this challenge by recruiting both independent practices and practices with loose affiliations through a variety of network arrangements. At the time of our site visit, only 4 of the 10 participating hospitals owned a large PCP network from which to recruit practices.

Third, hospital and practice leaders and program staff from most of the participating hospitals described a commitment to building processes within their EMRs to support sustainability. However, the changes are just starting to occur after one year of the cooperative agreement because of the time it takes to modify EMRs. Several hospital leaders noted that the EMR changes were happening faster than is typical because of the cooperative agreement. Program staff described a variety of temporary computer database and paper-based tools that have supported program operations while they await more permanent EMR adaptations.

Last, hospital and practice leaders and staff said that they have many competing priorities, some of which are clinical. For example, practice leaders and staff described nurses being pulled from care coordination activities to provide direct clinical care. Other competing priorities are administrative. For example, hospital leaders described multiple hospital quality improvement initiatives that can lead to “innovation fatigue” among providers. Program and hospital leaders also described multiple state and federal reform initiatives, such as state Medicaid accountable care entities and CMMI’s State Innovation Models Initiative, which can be confusing and fatiguing for PCPs. Hospital leaders and program staff described efforts to clarify the program and address practice concerns through the practice facilitators.

3. How do the awardee and implementing sites make decisions about program-related changes?

The National Association of Children’s Hospitals has a defined self-monitoring process but is still waiting for sufficient data on which to base decisions. The awardee has started populating databases that eventually will include enrollment figures, locally collected process data, participant family surveys, and Medicaid administrative and claims data. The National Association of Children’s Hospitals initially delayed the participant family survey because of workload constraints and slow enrollment, but as of November 2015 had begun fielding the survey with the first groups of consented enrollees. The awardee data analytics team finalized and tested a data intake and analytics process, and the hospitals continue to facilitate the data intake processes. In the coming year, the awardee, hospitals, and practices plan to complete semiannual reviews of implementation progress and outcome measures and to modify interventions using rapid-cycle process improvement methods. In the interim, the awardee, hospitals, and practices are using trial and error and anecdotal feedback from staff to make changes.

In addition to using data to drive program-related changes, the overall program plan emphasizes using parent advisors for developing and improving the program. Most of the participating hospital sites are still defining a formal plan, but at least one site has a parent advisor involved in discussing major decisions and design issues.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

Each of the 10 participating hospitals is developing and negotiating its own payment model. Because the sites are located in seven states and the District of Columbia, they must negotiate with different Medicaid payers. As a result, leaders at the National Association of Children's Hospitals planned to provide general support for the development of the payment models without specifying any one model—although, they are emphasizing that these models should be “anything but fee-for-service (FFS).”

The four hospitals that participated in our site visit varied in the progress they had made by the time we conducted interviews with their leaders and staff.² Most spent the majority of the first year of the award (1) negotiating with payers for access to usable claims data to begin the analyses necessary to develop a payment model and (2) holding preliminary discussions with payers about possible approaches to payment reform.

Leaders at the participating hospitals described three major supports for their payment reform efforts: (1) claims processing and actuarial consultants, (2) pre-existing payment reforms, and (3) relationships with payers. First, the National Association of Children's Hospitals contracted with a consultant to process claims data to create standardized data reports for the hospital sites and allow the sites to perform analyses on which to base payment reform proposals. Program and hospital leaders noted the importance of the expertise of this claims-processing consultant, given the many challenges with Medicaid claims data. The awardee also contracted with an actuarial consulting firm to provide general and individualized support to hospital sites in planning their payment models. Second, leaders at several participating hospital sites described exploration of existing payment reforms that could be leveraged to support the work being developed during the award, including Medicaid health homes initiatives, capitated accountable care arrangements, and per member per month care management payments. Third, leaders at the participating hospitals described the importance of leveraging existing relationships with leaders in the state Medicaid agency and managed care organizations (MCOs) and developing new relationships from the time of writing the proposal for the award. The relationships have been important for ongoing discussions about options for payment reform and for identifying existing and potential facilitators and barriers at the payer level.

² We gathered information on payment reforms only from the four hospitals that we included in our site visit. Thus, the information provided in this section illustrates some of the approaches that sites are implementing through this award. In consultation with CMMI, we may decide to systematically gather payment reform information from all participating sites during our next site visit.

Awardee and hospital leaders also identified several challenges related to their payment reform efforts, including (1) the time needed to obtain usable claims and payment data, (2) state and MCO reluctance to discuss payment reform for the target populations, and (3) the state's and MCOs' desire for payment models that are applicable broadly. First, the awardee and participating hospitals faced barriers in obtaining claims and payment data needed to plan for payment reform. Some National Association of Children's Hospitals and hospital leaders cited the need to address many anticompetitive and antitrust concerns from payers about releasing such data to a provider organization. In cases when these concerns arose, the awardee and the hospitals used third-party claims processing consultants to handle the data, delete provider-specific identifiers and out-of-network cost data, and included safeguards in contracts with payers. In addition, incomplete claims data submitted by the payers resulted in multiple rounds of communication and resubmissions of the data, which slowed the work of the claims processing consultant.

Second, leaders at several hospitals noted that their state Medicaid agencies and MCOs were reluctant to consider payment reform for CMC. Some said that their state Medicaid agency had experience with payment reforms not going well with similarly complex populations of children or adults, and this contributed to their concern about any similar efforts. In at least one state, the Medicaid agency prohibited the MCOs that cover CMC from entering into any alternative payment models with providers. Hospital leaders also noted that pre-existing or concurrent Medicaid payment reforms led Medicaid and MCO leaders to expect any proposed payment models to fit within these existing reforms rather than creating new ones.

Third, some hospital leaders noted that although state Medicaid agencies and MCOs might be open to negotiating new payment models, leaders of the agencies and MCOs were interested in models that could be applied more broadly. Hospital leaders noted that the population of CMC is relatively small and care is supplied by a small number of providers, while Medicaid agency and MCO leaders are more interested in payment models relevant to larger populations or the whole state.

D. Impact evaluability assessment

After assessing the evaluability of the program developed by the National Association of Children's Hospitals, we have concluded that a rigorous impact analysis is feasible in at least 8 of the 10 hospitals and possibly for all 10 (depending on the availability of comparison group data for the hospitals in Pennsylvania and the District of Columbia). The best approach to conducting the analysis is to match Medicaid children in the program within each hospital to a group of comparison children in the same state who have similar demographic and diagnostic characteristics, and similar health care utilization patterns in the year prior to enrollment. We will then estimate a difference-in-differences model, following the same treatment and comparison children longitudinally over time.

We will be able to conduct these analyses if we are able to obtain the appropriate data from the National Association of Children's Hospitals, the Centers for Medicare & Medicaid Services, or the states. We will work closely with the awardee and update CMMI regularly as we obtain additional information regarding the availability of the data needed for our analyses.

E. Next steps

We look forward to continuing to work with the National Association of Children's Hospitals for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

After we receive baseline Medicaid claims data from the awardee, we will summarize key demographic characteristics and baseline health care utilization of the children enrolled in the CARE program. For each state or health plan, we will then assess the feasibility of using awardee-provided claims data to construct a comparison group. We will determine whether each data set includes beneficiaries beyond those enrolled in the CARE program. If so, we will explore whether there are enough CMC who are not enrolled in CARE to comprise a comparison group, matched to the intervention group on key demographic and health characteristics.

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APPENDIX B.22

NATIONAL HEALTH CARE FOR THE HOMELESS COUNCIL

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REPORT

APPENDIX B.22

HCIA Round Two Evaluation: National Health Care for the Homeless Council

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–December 2015)

Successes

- Developed policies for patient-centered care, flu vaccinations, and tobacco cessation at participating respite care program sites to standardize services, most of which existed to one extent or another before the cooperative agreement went into effect.
- Developed workflow processes for collecting data related to the standardization of the following services: transitional care coordination, participant engagement, and care management.

Challenges and strategies to address them

- Some participants have resisted engaging in self-management goal setting (i.e., a willingness to engage with the care manager and complete surveys). Sites have adjusted their workflow processes to engage individuals earlier during their stay.
- Of the five sites, three began to enroll individuals in the first year of the program. Two of the three initiated enrollment as planned, and the other was delayed by challenges related to an institutional review board (IRB). The other two sites were scheduled to begin enrollment in the second year of the program. All sites were enrolling individuals by December 2015.

Lessons learned

- It is vital to collect data and keep track of how and when data should be collected to measure utilization of the standardized respite care services: transitional care coordination, participant engagement, and care management.
- Changes to workflow might be necessary to increase participants' completion of measures.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the December 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2, programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and

improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Medical Respite Care Program,¹ which is being implemented by the National Health Care for the Homeless Council. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the National Health Care for the Homeless respite program, including its initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted by phone, during a recent site visit to one of the five implementing sites—Circle the City in Phoenix, Arizona—and a review of National Health Care for the Homeless reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the medical respite care program from National Health Care for the Homeless, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the impact evaluability assessment for National Health Care for the Homeless and identify next steps in our evaluation.

¹ Throughout this narrative, we refer to the program as "the respite program."

A. Introduction

National Health Care for the Homeless is a network of more than 10,000 health care workers (doctors, nurses, social workers, and advocates) who share the goal of ending homelessness. As the awardee, National Health Care for the Homeless is responsible for implementing a standardized model of respite care by establishing a consistent service delivery model. The standardized model of respite care consists of three essential services, which are also the innovation's components: (1) transitional care coordination, (2) care management, and (3) patient engagement. The following are the five respite programs:

- Circle the City (Phoenix; launched March 2, 2015)
- Harborview Medical Center (Seattle, Washington; launched August 17, 2015)
- Columbus House (New Haven, Connecticut; launched March 2, 2015)
- Central City Concern (Portland, Oregon; launched June 8, 2015)
- Hennepin County Health Care for the Homeless and Catholic Charities of St. Paul and Minneapolis (Hennepin County, Minnesota; launched September 21, 2015)

All five implementing sites provided the three essential services to some extent before the HCIA R2 cooperative agreement, but they did not document or provide them in a consistent manner, as described below.

- Clinical care at the five sites was provided by either respite care or contracted providers:
 - Central City Concern: physician, nurse
 - Circle the City: physicians, nurses, contracted psychiatrists, physical therapists
 - Columbus House: contracted nursing services
 - Harborview: physician, nurses, mental health practitioners
 - Hennepin County: pharmacist, nurse, clinical social worker
- Attention to preventive care, such as tobacco cessation, was uneven across sites; staff may or may not have offered the service and rarely documented their interaction with patients.
- There was variation in the extent to which follow-up care was arranged for patients prior to HCIA R2 (a few sites had no systematic way to ensure that patients were connected to a primary care provider [PCP] at discharge).

The standardized model of respite care focuses on adults age 18 or older who are homeless and have an acute illness or injury. The program requires participants to have already been admitted to medical respite care so they are not recruited through the hospitals. Medical respite

“The medical condition is not so severe that they can remain an inpatient, but it’s severe enough that if they return back to the streets or another facility that didn’t have the medical structure we did, they would most likely either die or become so severe that they would be back into inpatient. So, our primary thing is we are looking at their medical needs, and then the second primary thing is that they are homeless. They do have to be homeless to be a resident here.”

— *Data manager*

care patients are considered to be a high-risk, high-cost, and underserved population.

Participants who are referred to respite care are healthy enough to leave the hospital but require additional care and support for recovery. Most of the participants qualify for Medicaid; of those who do but are not yet enrolled, medical respite staff will begin the enrollment process. A small percentage of participants are age 65 or older and are considered to be dually eligible. The program

staff also includes the addition of an HCIA-funded data manager at each of the five sites to facilitate the implementation of the data collection tools and to help other staff with any necessary workflow changes to improve data collection. The data manager also serves as a liaison to partnering hospitals and collects and monitors hospital data on emergency department (ED) visits and readmissions. The new data collection tools allow the data manager at each site to track the utilization of, and quality improvement in, the respite care services. The five implementing sites also hired additional staff with various skills to meet the needs of the target population and to ensure that each site has the clinical capacity to deliver the standardized model of respite care.

The awardee’s theory of change/theory of action is that increasing the target individuals’ access to standardized respite care services (that is, care management, transitional care, and patient engagement) after a hospitalization for an acute injury or illness will lead to better management of chronic conditions, increased use of preventive services, and fewer ED visits or readmissions. The awardee also hypothesizes that providing care management specific to the needs of people who are experiencing homelessness (for example, self-management goal setting and help finding housing) will result in better health outcomes, fewer ED visits, and lower health care costs. Other key characteristics of the National Health Care for the Homeless program are described in Table 1.

Table 1. National Health Care for the Homeless: Respite characteristics at a glance

Program characteristic	Description
Purpose	Establishing standardized model of respite care by providing and tracking the utilization and quality improvement of three existing services: (1) care management, (2) patient engagement, and (3) transitional care coordination in a setting that is safe for participants.
Components	<ul style="list-style-type: none"> Care management (primary): assesses participant's needs, and align resources to support participant's recovery and health Patient engagement (primary): assists participant in self-management goal setting and care plans, reassess goals and plans to empower participants to better manage their health Transitional care coordination (primary): after participant is discharged from a hospital, another medical facility, or to alternative housing, helps participant to establish a care team of providers and follow-up appointments
Target population	The program focuses on people 18 years old or older who are experiencing homelessness and have an acute illness or injury. Participants will have already been admitted to medical respite care, so they will not be recruited through the hospitals. Medical respite care patients are considered a high-risk, high-cost, and underserved population. Most of the participants qualify for or are enrolled in Medicaid. For those who qualify, but are not yet enrolled, staff will begin the enrollment process. A smaller percentage are older than 65 and considered dually eligible.
Theory of change/theory of action	An increase in access to respite care after a hospitalization for an acute injury or illness will lead to better management of chronic conditions, increased use of preventive services, and fewer ED visits. Providing care management specific to the needs of persons experiencing homelessness (self-management goal setting) will result in better health outcomes, fewer ED visits, and lower health care costs.
Payment model	Per capita care management payment The awardee originally proposed a per-member per-month (PMPM) case-rate payment model in which Medicare, Medicaid, or hospitals pay the fee for the medical respite services. National Health Care for the Homeless is currently exploring a monthly fee, with a percentage of the fee being value based.
Award amount	\$2,673,476
Launch date ^a	March 2, 2015
Setting	Medical respite care service programs
Market area	Urban
Market location	City
Core outcomes	Participant adherence to prescribed medications; participant understanding of treatment plan; participant self-management of chronic conditions; increase in smoking cessation; increase in number who receive vaccinations as recommended; increase in linkages with social services; improvement in care coordination; decreased hospital utilization and costs

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by National Health Care for the Homeless to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during telephone discussions with the awardee from October 1 to November 9, 2015, and a site visit to Circle the City on November 17

and 18, 2015. For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visits, we interviewed program leaders, site directors, data managers (at four of the five sites), frontline staff, and partners. The phone interviews with program leaders and data managers focused on identifying the barriers the sites are encountering and the strategies they are using to overcome them. We conducted an in-person site visit at Circle the City because it was farther along than the others in implementing the standardized program model. We met with program staff as well as a local hospital partner. In addition to identifying barriers and the difficulties associated with overcoming them, the in-person site visit helped broaden our understanding of how the innovation differs from the usual care the sites were already providing. The project director recommended that we delay speaking with Central City Concern (in Portland) until later in 2016 because the staff to be funded through the HCIA R2 cooperative agreement was not expected to be in place until December 2015.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we made audio recordings of the interviews and transcribed them. A team member received training on qualitative analysis using NVivo software; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review, the evaluation team synthesized the material into this narrative on the implementation experience of National Health Care for the Homeless.

C. Findings

1. How effectively has the program been implemented?

The aim of National Health Care for the Homeless is to improve the health of populations of homeless individuals through activities focused on engaging them in prevention, wellness, and comprehensive care that extend beyond clinical service delivery. The current implementation efforts focus on enrolling participants, developing sound data collection tools, training newly hired data managers and key staff, adapting workflows to improve utilization, and improving the quality of existing services.

National Health Care for the Homeless encountered unexpected delays due to the need for additional IRB approvals and the hiring of new staff. Two of the three sites scheduled to launch in Year 1 launched on time (by March 2015). The third site (Harborview) experienced a delay related to IRB challenges and launched in August 2015. National Health Care for the Homeless learned through this process that early submission of IRB applications is vital.

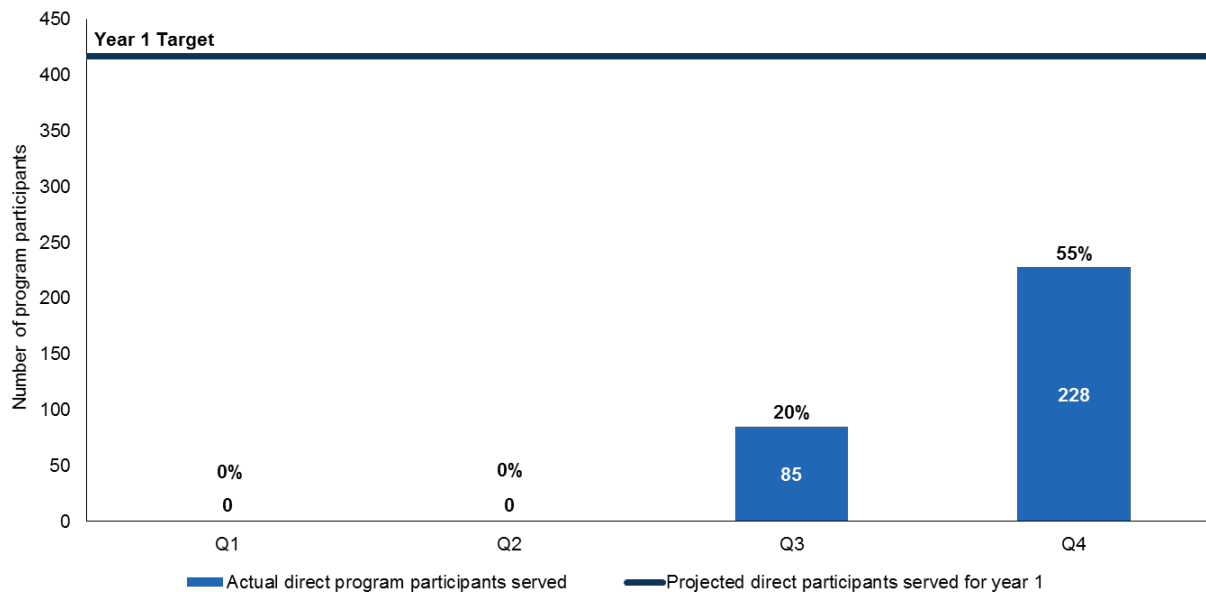
National Health Care for the Homeless also applied this lesson to its IRB submission process for the two remaining sites. Both were scheduled to launch in Year 2. One of these two

sites (Central City Concern) launched in June 2015 (earlier than its scheduled launch date) with the support of non-HCIA R2-funded staff. The other site, a collaborative effort between Hennepin County Health Care for the Homeless and Catholic Charities of St. Paul and Minneapolis, launched in September 2015 at one facility and in December 2015 at another facility. Because the IRB application for both of these sites was submitted earlier, the approval process moved forward more quickly and thus did not delay the launch. Hiring new staff members at these two sites, however, led to a delay in enrolling participants and interfered with the sites' ability to provide the standardized model of respite care services and meet standards for reporting and data collection from National Health Care for the Homeless.

National Health Care for the Homeless is reaching the target population due to demand for respite care services from partnering referring hospitals. The decision from National Health Care for the Homeless to choose existing respite care programs with at least one relationship with a major referring hospital has allowed the participating sites to target homeless individuals who are eligible for respite care. For purposes of the cooperative agreement, National Health Care for the Homeless defines participants as individuals who sign the informed consent form. However, all individuals referred to the sites—participants or not—receive the same standardized model of care. National Health Care for the Homeless noted there is growing demand for respite care services from referring hospitals, and respite care programs are often unable to accommodate new patients, indicating a need for additional beds.

Year 1 enrollment is below the projected 495 participants by 54 percent because of delays in the hiring of new staff, IRB issues, and a limited number of beds available for respite care services. As shown in Figure 1, the awardee reported that 228 individuals were enrolled in the standardized model for respite care during Year 1. On average, 80 percent of the patients who learn about the standardized medical respite program via the consent process agree to participate. The reasons provided for a 20 percent refusal rate include a high proportion of non-English-speaking patients (in Washington and Arizona) and patients who have concerns about their privacy.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. National Health Care for the Homeless does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

Below, we discuss the facilitators, barriers, challenges, and implementation strategies for each of the three primary components of the model: care management, patient engagement, and transitional care coordination. National Health Care for the Homeless used these components as criteria for selecting sites in order to standardize the services participants receive.

a. Primary component: care management

Care management is a primary component for this innovation as it incorporates the provisions and processes for sites to revise existing care management services or prepare new ones to align to the standardized model. In general, care management includes the assessment of the participant's needs and alignment of his or her needs with resources to support recovery and overall health. The innovation formalizes this component by ensuring that all sites have the following in place:

- Trained staff to create patient-centered care plans alongside the individual

- Staff to provide clinical oversight/care, assistance with Medicaid enrollment, medication monitoring, case conferencing, and establishment of a medical clearance date
- Provisions and workflows for offering tobacco cessation and influenza vaccination
- Social support/case management services (identification, housing, and social security income)
- Data collection efforts to track continuum of care, including medical clearance date

National Health Care for the Homeless provided training webinars relating to patient-centered care, patient consent, and motivational interviewing. Training webinars were required for all HCIA R2-funded staff. Several data managers and a case manager said the sessions provided new information or helped build their confidence in working more directly with participants. Ongoing data collection training occurred through monthly meetings between National Health Care for

“One of the webinars was about patient-centered care, and I was like, ‘Oh no, we have to write a whole policy about this.’ But it really was a lot of stuff that we were already doing. As you’ve seen, we have a lot of programs in place and our . . . we kind of have to customize care because our patients are so unique in their needs and the services that they require. We were already doing a lot of it and I was just really getting it on paper and giving examples of this is how we’re making sure that our patients are getting the highest level of care and that it’s personalized for them.”

— *Data manager*

the Homeless leaders and their internal evaluator—Brandeis University. The only training-related recommendation from several data managers was to learn more about the history, current state, and vision of respite care. Many of the data managers and case managers were not familiar with respite care before they were hired for this program.

More extensive data collection efforts led to better communication among respite program staff about necessary workflow changes. Before enrolling participants, data managers received an implementation guide to help sites establish and write out policies for existing or new services. For example, each site had to have a flu vaccination policy in place prior to administering the flu vaccines. This required the data manager to meet with key staff to figure out the workflow and when and how data would be collected from the participants. The creation of policies for flu vaccination, patient-centered care, and tobacco cessation prior to enrolling participants introduced staff to the new processes they would be implementing.

The newly created data manager position often took project management responsibilities to establish the workflow for implementing the standardized model of care. The HCIA R2-funded data manager at each site serves as the point person for collecting data and implementing any new workflow processes for all the components. Although the data manager will not necessarily assess the individual’s needs or determine the best resources for that person, the manager will work closely with staff who are providing clinical care for the participant. The data manager ensures that staff are communicating and logging information in a similar way to collect and track utilization of existing health services. For example, the data manager at Circle the City works with the intake coordinator and care manager to create policies to collect data at

specific times and add fields into the electronic medical record (EMR) so that when the intake coordinator and care manager meet with the participant, the data is already in the file and the data manager knows when and how to access it.

b. Primary component: patient engagement

Patient engagement incorporates self-management goal setting and care plans as a formalized approach for empowering the individual to better manage his or her health. The awardee formalized this component by ensuring that all sites have the following in place:

- Staff trained in motivational interviewing
- Self-management goal setting
- A process whereby staff can educate participants on ways to better manage health

As mentioned, National Health Care for the Homeless offers webinars in patient-centered care and motivational interviewing to help implement this component.

Through its efforts to engage patients, the awardee has identified ways to improve the quality of implementation by creating a guide and data collection tools that have been streamlined and revised through site-specific feedback. As the first sites to implement the program began to enroll patients, they learned how to work around workflow challenges within each setting to improve patient engagement. The implementation guide helps the awardee to continuously refine the process at each site.

In all sites, however, engaging participants in their own care has been a challenge. The awardee was faced with a high rate of incomplete forms because of discharges that the data manager was not aware of (or because the participant simply left against medical advice). Staff have now instituted the practice that once a participant receives his or her medical clearance to leave, the data manager obtains the in-person data. In many cases, although participants leave after receiving clearance, they may have the option to stay until a housing option is available.

c. Primary component: transitional care coordination

Transitional care ensures that participants are connected to primary care and social services. The awardee operationalizes transitional care as including:

- Primary care follow-up appointments within 30 days of being discharged from the hospital
- Updated health care information communicated to the PCP
- Updated health information supplied to the participant upon leaving the program
- Surveys to assess participant experience

Case managers at each site or social workers identify participants' needs and work to address them while the individual is in respite care. The most common issue addressed by care managers and social workers is housing after discharge from respite care. Securing housing requires that the participant stay for an extended time (up to two or three weeks after medical clearance in some cases). Whenever possible, the sites will allow the participants to remain in the respite care facility as long as they abide by the rules. The case managers also work to schedule a primary care appointment while participants are engaged in respite care, and some sites have local partners that provide this care. Barriers to providing transitional care tend to be related to patient engagement in that the patient leaves earlier than planned and misses the opportunity to get housing or other services.

3. How does the awardee make decisions about program-related changes?

National Health Care for the Homeless leaders are actively engaged with the participating sites to ensure that decisions on delivering consistent clinical and social support services in all sites are feasible and understandable. During the initial phase of implementation, National Health Care for the Homeless leaders met frequently with data managers to gather feedback on the implementation guide, an online guide that provides standardized definitions, data collection tools, and processes for implementing standardized services across all sites. One data manager described this tool as a “running guide” of collective questions, answers, and strategies. Respite programs that are interested in understanding the standardized model can refer to this guide as a source of lessons learned and for suggestions on how to implement essential components of the model. National Health Care for the Homeless regularly updates the guide based on feedback collected at monthly meetings from data managers and staff.

Data manager-led collaboration is widely regarded as a helpful for discussing site-specific challenges and strategies for addressing them. Once data managers began to meet with staff to update existing provisions or create new ones aligned with the standardized model of respite care, data managers decided to initiate a bimonthly meeting. They used this meeting to discuss ways to improve data collection tools for the standardized model and data collection processes for the implementation and monitoring contractor. Any pressing issues or questions discussed in the meetings are relayed to National Health Care for the Homeless leaders to discuss during the monthly call.

Data managers engage with internal respite program staff to gain buy-in and to track utilization of standardized respite care services. Before patients are enrolled, data managers meet with key service providers to discuss their respite program's current policies for standardized respite care services (policies for flu vaccines, for example). These discussions prompted key staff to buy into the program and led to suggestions about how to improve workflow and processes. The implementation guide provides clear instructions regarding the data required for tracking utilization of respite care services. Several data managers reported that tracking the participant's continuum of care while in the respite program has led to more informed communication about service delivery and workflow. When data are missing for a specific clinical service, data managers are able to pinpoint the individuals for whom the data

might be missing and improve the service delivery, encounter-level data, and workflow processes.

All data managers and frontline staff we interviewed seemed engaged and believe that the need for a standardized model of respite care is critical for sustainability and reimbursement of services. We addressed the challenges facing frontline staff in Section 2, but one open question is the growing demand for respite care services from referring partner hospitals. The one hospital care manager we interviewed is pleased with the services provided to homeless individuals but realizes that, given the current capacity, it would be challenging to take on additional patients.

4. To what extent has the awardee begun to plan for or implement payment reforms?

National Health Care for the Homeless estimates that the implementation of the standardized model of respite care will reduce hospital inpatient utilization by 30 percent and ED utilization by 20 percent. To achieve this goal and provide standardized respite care services across five sites, National Health Care for the Homeless proposes a monthly fee for Medicare, Medicaid, and dually eligible beneficiaries. Because medical respite care is not generally a reimbursable service, the proposed payment model depends on each site's capacity to bill for clinical services under the standardized model. The primary funding source remains local hospitals, which will purchase beds or pay a daily rate in order to refer their patients who are experiencing homelessness, have been hospitalized, and are not yet well enough to be discharged to the street. The proposed payment model is based on three elements: (1) costs from previous year(s), (2) the value of clinical services, and (3) the acuity of the patient population. The facilitators and challenges below explain our understanding of the payment model implementation.

Prerequisites for choosing implementation sites are (1) the site is located in a Medicaid expansion state, and (2) the site has a partnership with a local hospital(s), which is critical to assessing payment for medical respite services. The partnership application from National Health Care for the Homeless listed specific criteria for programs to be included in the standardized model. To participate, a program must be in a Medicaid expansion state and have a partnership with at least one major referral hospital. Focusing on programs in Medicaid expansion states means that the potential exists for programs to receive payment for services provided to Medicaid enrollees. In addition, respite programs that employ a billable provider and are licensed and authorized by the state Medicaid agency can bill for medical respite care services that are eligible for reimbursement. For example, when a medical respite care program is affiliated with a federally qualified health center (FQHC), the FQHC providers can bill for services provided to respite care patients. In addition, requiring a relationship with a major referral hospital ensures that the respite program will have a revenue stream because most hospitals pay them for a specific number of beds or an amount per day for each referral. Hospitals are motivated to send homeless patients to a safe place for recovery because this reduces the hospital length of stay.

Outside of an affiliation with Medicaid providers, National Health Care for the Homeless is exploring how its partner sites could implement a payment model if the organizations do not bill

for services or have a relationship with payers. The intent is to have sites negotiate with their state offices to determine a monthly rate for payment, but this model has not been developed yet. In the meantime, enrollment delays are impeding the ability of National Health Care for the Homeless to collect and assess data related to its payment model.

Clinical service capacity varies across all the sites, which influences how sites collect data and bill for services related to the standardized model. Some medical respite programs do not have clinical resources so they pull together external resources to fill a need in the health care delivery system. For example, Columbus House does not provide clinical care; it contracts with agencies that are members of the Visiting Nurse Associations (VNAs) to deliver care to participants. Extensive documentation is required to bill an outside entity, such as the visiting nurse association, for providing the care management-related services. Other respite programs may employ billable providers, but the types of providers and the intensity of services provided vary across sites. These variations influence the billable monthly case rate, which is based on negotiated rates with the state Medicaid provider. These negotiated rates are based on a different intensity of services and staffing. For example, the state Medicaid provider would not pay a program like Circle the City, which has a very robust clinical care team on site, the way it would pay a program that has only three beds for medical respite care.

The monthly negotiated rate is based on program cost data from the previous year(s); thus, the payment model depends on receiving timely, accurate data from partnering hospitals and the state Medicaid provider. For each participant, sites are striving to collect encounter and cost data. Several sites, however, do not have EMR interoperability with referring hospitals so there are additional delays in capturing data on participant encounters and costs. Without this data, negotiated rates cannot be determined for billable providers employed by the respite programs. To overcome this, National Health Care for the Homeless is striving to develop a set of standards to implement nationally so that current and emerging respite programs can achieve accreditation and reimbursement for clinical services in the future.

National Health Care for the Homeless is also focused on how to incorporate value into the monthly case rates. The value-based component would be based on programs meeting negotiated performance objectives. For example, a program would lose five percent of that monthly rate if performance objectives were not met, and it would receive full payment if it meets program objectives and an additional five percent if it exceeds program objectives. However, incorporating value into a monthly case rate requires that staff be in place and able to bill for services related to the standardized model. Because staff are currently not in place at all sites and revenue streams vary for each site, the feasibility of implementing a value-based payment component is unclear. As the awardee continues to test the payment model, we will gather information on the feasibility of implementing a value-based payment component.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we conclude that we will be able to evaluate—with significant qualifications—the National

Health Care for the Homeless innovation using a difference-in-differences evaluation. Specifically, the ability to identify homeless beneficiaries in claims data will determine our ability to draw a credible comparison group. We are currently analyzing Alpha-Max data in the five states for Medicaid enrollees and plan to better characterize homeless beneficiaries when we receive sufficient data from the awardee. We anticipate that this model for estimating impacts will—if enrollment reaches the awardee’s target—have sufficient statistical power to detect impacts for the four core measures: total expenditures, hospitalizations, hospital readmissions, and ED visits. Other major concerns about evaluability include timely availability of Medicaid data, continuous Medicaid eligibility of participants, and participant retention in respite care for a sufficient duration to impact outcomes.

E. Next steps

We look forward to continuing to work with National Health Care for the Homeless for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include testing our strategy for identifying beneficiaries who experience homelessness for the treatment and comparison groups, identifying regions from which to draw the comparison group, and using propensity score-based matching to select comparison group beneficiaries that are similar in observable characteristics to the treatment group. Baseline descriptive statistics will be reported when data is available for 50 participants enrolled in the treatment group. Regression-adjusted estimates will be included when there is a sufficient sample size to run models, approximately 300 participants in the treatment and control group, and six months of exposure to the intervention.

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APPENDIX B.23

NEBRASKA MEDIC**INE**

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REPORT

APPENDIX B.23

HCIA Round Two Evaluation: Nebraska Medicine

August, 2016

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FINDINGS AT A GLANCE (September 14, 2014–December 9, 2015)

Successes

- The Nebraska Medical Center, doing business as Nebraska Medicine, enrolled over 400 patients through November 2015 in the Remote Interventions Improving Specialty Complex Care (RIISCC) program, a diabetes remote patient monitoring (RPM) and coaching program.
- The awardee achieved significant early improvements in diabetes measures. According to the awardee, of the participants who completed the 90-day phase of the program, only 13.2 percent had a hemoglobin A1c value greater than 9, compared with 44.6 percent at baseline. This represents a 71 percent drop in patients with hemoglobin A1c levels over 9. Hemoglobin A1c is a key metric for diabetic patients. People without diabetes have values between 4 and 5.6; levels of 6.5 or above indicate diabetes.
- The awardee developed a data management plan to monitor program participation and intermediate outcomes, and created tools to integrate disparate information from sources throughout the program.
- The awardee developed an interface between the RPM software and its own electronic medical record (EMR) so that clinicians have easy access to their patients' RPM information, such as blood glucose levels, blood pressure, weight, and vital signs.

Challenges and strategies to address them

- Staffing. The original project director resigned in June 2015 with limited notice; three more staff members (a lead nurse and two medical assistants) resigned that summer. Nebraska Medicine appointed a project director/investigator and a co-investigator in summer 2015. A new executive director for the tele-health program has been hired. The program worked with Nebraska Medicine's human resources department to improve recruitment and hiring. The program is now almost fully staffed.
- Recruitment and enrollment. The number of patients eligible for the program was lower than projected. The acceptance rate of patients approached to enroll (approximately 50 percent) was also lower than anticipated. A number of programmatic changes increased enrollment, including adding Bellevue Hospital to the program. A clinician with extensive EMR expertise helped the team to refine the criteria for identifying patients in the EMR, doubling the number of eligible patients. Experts in recruitment and enrollment for research studies from the University of Nebraska Medical Center are advising the team on how to revise the protocols and scripting to increase the program acceptance rate.

Lessons learned

- Intensive RPM enhanced the participants' accountability for their health, showing great promise in driving improvements in clinical outcomes and in key metrics such as blood glucose control for people with diabetes.
- Collaboration, communication, and coordination among Nebraska Medicine clinical staff who work with the same participants have both created a seamless experience for participants and prevented the duplication of clinical efforts.
- A strong communication plan should be in place early in a chronic disease management program such as this one; the plan should include primary care physicians so that they understand the program and can help to achieve its goals.
- Careful planning ensures appropriate program sequencing, especially with respect to the time needed to acquire equipment for remote retinal eye exams, to establish the interface between the RPM equipment and the EMR, and to train and certify the staff to give the eye exams.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on December 9, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Remote Interventions Improving Specialty Complex Care (RIISCC) program, which is being implemented by Nebraska Medical Center, doing business as Nebraska Medicine. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Nebraska Medicine's RIISCC program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This report presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to Nebraska Medicine; and a review of the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Nebraska Medicine's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the evaluability assessment for Nebraska Medicine and identify next steps in our evaluation.

A. Introduction

Nebraska Medicine is using its HCIA R2 funds to develop and test the RIISCC program, which provides remote patient monitoring (RPM) for participants with diabetes for 90 days after they are discharged from the hospital and an additional nine months of health coaching.

Nebraska Medicine is an academic medical center and teaching hospital for the University of Nebraska Medical Center. Staff from both organizations are involved in program management and support. The current project director/investigator, for example, is a faculty member and department chair in the University of Nebraska Medical Center's College of Public Health.

The awardee's partners in the RIISCC program include Bellevue Hospital, a community hospital that is part of Nebraska Medicine, and three primary care clinics. The clinics include Charles Drew Community Health Center, a federally qualified health center; Midtown Clinic, a community health center; and Bellevue Clinic, which is affiliated with Bellevue Hospital. Participants agree to be seen by a program medical assistant (MA) in one of these clinics at the end of their 90-day intervention.

This program incorporates the theory of change/theory of action (TOC/TOA) in which the awardee hypothesizes that by providing early and timely post-discharge services (including home RPM equipment and telephone coaching) as well as incentives to promote a participant's self-management, the program will (1) improve care following discharge, (2) reduce all-cause admissions and emergency department (ED) visits within 90-days from discharge, (3) reduce admissions for uncontrolled diabetes, and (4) reduce the costs of care for participants.

In more specific terms, the program goals include the following:

- Improving key clinical measures (blood glucose levels, hemoglobin A1c levels, obesity, blood pressure) for participants
- Reducing all-cause readmissions and ED visits within 90 days of discharge

- Reducing costs for participants by 10 percent by decreasing all-cause readmissions, by August 30, 2017

The program's primary components include the following:

- **Care management, which includes home care.** Health coaches, who are registered nurses (RNs), work with participants to help them meet diabetes self-management goals. Hired by the program, the health coaches also provide coaching and care management services as part of the participants' home care.
- **Telemedicine.** Health coaches work with participants by telephone and via the Cardiocom® system, in which participants use the home RPM device to measure and submit readings on blood pressure, blood sugars, and weight to the health coaches.¹ The RIISCC program also purchased or leased and installed portable video conferencing carts with a digital camera, digital retinal eye exam cameras, and a handheld video camera at the three clinics.
- **Patient and family engagement.** Through coaching, nutritional counseling, just-in-time patient education, and daily monitoring of critical values, the RIISCC program staff engages patients to improve their self-care.

The RIISCC program starts with the identification and recruitment of hospitalized patients with a diagnosis of Type II diabetes who meet the other program eligibility requirements (that is, age 19 and older; not pregnant; and residing in the targeted zip codes for Douglas County, where the city of Omaha is located, and for Sarpy County, the county immediately to the south of Douglas County). Patients may have been admitted for any reason, not necessarily for a condition related to their diabetes; examples include a motor vehicle accident or a same-day procedure such as a colonoscopy. The RN health coaches recruit patients at the hospital or by telephone after they return home. A lead nurse visits eligible hospitalized patients and describes the program features, benefits, and enrollment process. This in-person visit takes approximately 30 minutes. Eligible patients who are discharged before one of the nurses is able to approach them in the hospital receive a phone call from a nurse within 72 hours of the discharge to discuss the program. If the patient agrees to participate, the nurse schedules a time for an MA to go to the patient's home to deliver, install, and demonstrate how to use the RPM equipment.

The program consists of the following:

- RPM equipment installed in a participant's home, which includes a Cardiocom® base unit, a scale, a blood pressure cuff, and a glucometer (if the participant does not already have one). Participants submit daily readings via the Cardiocom unit for 90 days and work closely with their health coaches to set and work towards goals related to diet, exercise, medication adherence, weight and blood pressure control, and so on. The coaches direct patients to Nebraska Medicine's outpatient pharmacy, which has several programs for participants to

¹ Cardiocom® is a developer, manufacturer, and solutions provider of integrated clinical tele-health hardware, software, and clinical services. See www.cardiocom.com.

apply for free or reduced-cost insulin. They can also help participants find a salon that will help participants trim their toenails properly.

- A baseline hemoglobin A1c test and preliminary foot exam at the hospital or by the MA at the participant's home after the equipment is delivered.
- A 90-day visit in which participants go to one of the primary care clinics, return their RPM equipment, and have hemoglobin A1c checked. They also receive a virtual foot and eye exam, and a certified diabetes educator (CDE) provides counseling on nutrition. The MA performs the foot and eye exams, although the interpretation is provided virtually by the CDE for the foot exam and at a later time by the ophthalmologist for the eye exams. The MAs must be trained and certified to administer these exams. More specifically:
 - The MA turns on the cart-based video camera and dials the CDE. When the coach answers the video call, the MA uses a handheld video camera to send images of each foot to the CDE, who can view them on the monitor at her location. Once the foot exam is complete, the MA uses the cart-based video camera for a virtual nutritional consult.
 - The MA also takes the retinal eye images and sends them electronically to the Truhlsen Eye Institute for ophthalmological review. The ophthalmologist interprets the images and the results are communicated back to the CDE through the EMR. The CDE then contacts the participant, informs his or her doctor about the test results, and documents the visit, including the test results, in the EMR.
- After 90 days, participants receive another nine months of monthly coaching calls.

Patients receive incentives for participating: a \$10 gift card at each stage of the program as well as an additional \$10 gift card for returning their equipment (potentially \$50 total).

Other key characteristics of the RIISCC program are described in Table 1.

Table 1. Nebraska Medicine: RIISCC characteristics at a glance

Program characteristic	Description
Purpose	To provide RPM and health coaching to individuals with diabetes who live in underserved areas of Omaha, Nebraska
Components	Care management (primary), telemedicine (primary), patient and family engagement (primary), and home care (primary)
Target population	Residents of Douglas and Sarpy counties near Omaha, Nebraska, who live within a 20-mile radius of the hospital, are age 19 and older, have a diagnosis of Type II diabetes, have been recently discharged from the hospital, and are at high risk for readmission
Theory of change/theory of action	<p>The awardee hypothesizes that by providing early and timely post-discharge services (including, home tele-health equipment and telephone coaching) and incentives to promote self-management, the program will do the following:</p> <ul style="list-style-type: none"> • Improve care at transitions • Improve key diabetes metrics (blood glucose levels, blood pressure, hemoglobin A1c, body mass index) • Reduce admissions for uncontrolled diabetes • Reduce costs of care for the participating target population
Payment model	<p>Shared savings, bundled payment</p> <p>The payment model includes incentives for hospitals for performing RPM, for the clinic responsible for ensuring that participants report to their 90-day appointment, and for the participant for successfully completing the RPM program. The awardee expects the program to reduce ED visits and hospitalizations.</p>
Award amount	\$9,993,626
Launch date ^a	December 22, 2014
Setting	Academic medical center, community health care clinics, participants' homes
Market area	Urban
Market location	Douglas County, Nebraska, where the city of Omaha is located, and neighboring Sarpy County, south of Douglas County
Core outcomes	<ul style="list-style-type: none"> • Improved blood pressure and hemoglobin A1c • Fewer all-cause unplanned readmissions hospital-wide • Fewer admissions for uncontrolled diabetes • A reduction in body mass index (BMI) • A reduction in morbidity and mortality due to diabetes and obesity • An increase in the percentage of participants receiving diabetes eye and foot exams

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by Nebraska Medicine to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit, conducted on December 8 and 9, 2015, in Omaha, Nebraska. For our

document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we visited the program's main office; the three primary care clinics in which the 90-day follow-up visits take place (Charles Drew, Bellevue, and Midtown clinics); and Nebraska Medicine's diabetes clinic. We interviewed the co-investigators, the project manager, three MAs, a lead nurse, the two lead clinicians (an endocrinologist and a family medicine physician), the data manager, and several members of the leadership team who supported the transition after the original executive director left.

A two-person team conducted the interviews in person using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. Another team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts describing the implementation experiences. The team then extracted text pertaining to the research questions identified in Section C. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative on Nebraska Medicine's implementation experience.

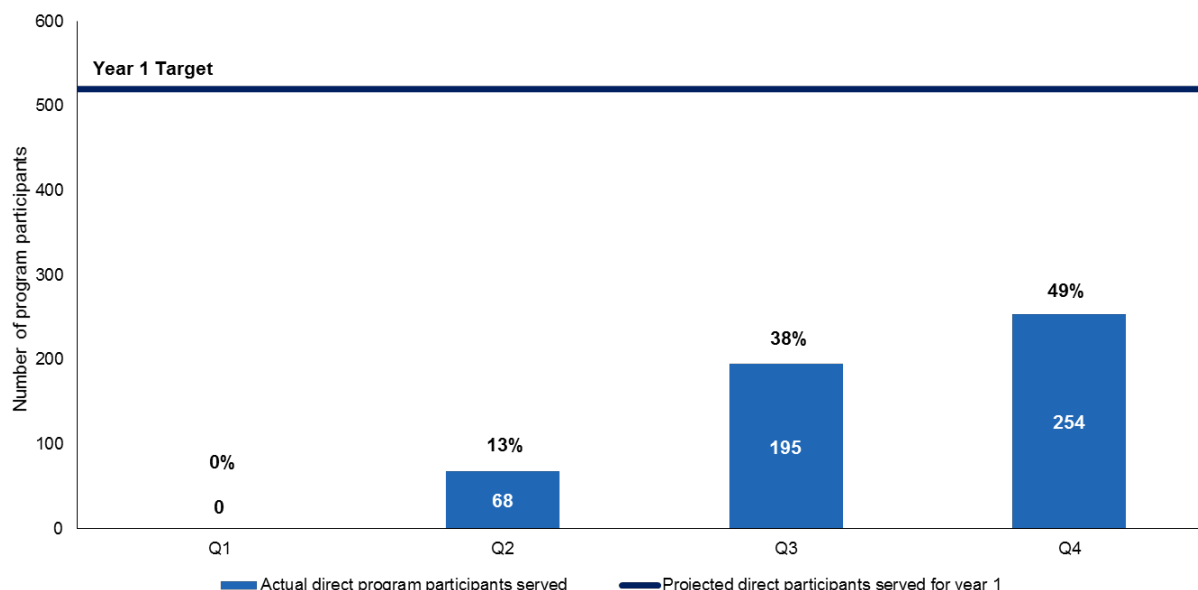
C. Findings

1. How effectively has the program been implemented?

Overall, implementation has gone largely as planned but slower than the projected timeline (Figure 1). Enrollment goals were not met by the end of Year 1 because of the resignation of the original project director and several of the program staff in quarters 2 and 3, along with some unexpected implementation problems. A transition team, led by the vice chancellor for research at the University of Nebraska Medical Center, a new project director/investigator, and a co-investigator quickly formed to address important operational issues such as staffing and enrollment. The awardee has also brought other new staff into the program who are employees of either Nebraska Medicine or the University of Nebraska Medical Center (two staff members are employees of both organizations).

The awardee has also made a few course corrections, including (1) adding another referral hospital, Bellevue Hospital; (2) filling other staff vacancies (lead nurse, health coaches, and MAs); (3) developing a data collection plan and designating a data collection staff; (4) refining the criteria for program participation and disenrollment; and (5) involving more clinicians at both Nebraska Medicine and the University of Nebraska Medical Center. At the time of the site visit, Nebraska Medicine had accelerated enrollment, was catching up on meeting its enrollment targets, and had demonstrated early improvements in participant outcomes such as hemoglobin A1c levels.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. The RIISCC program does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The four primary care components of the RIISCC program are closely linked: (1) care coordination, (2) telemedicine, (3) home care, and (4) patient and family engagement. Although we distinguish between these components for evaluation purposes, the program staff consider them as a unit. As a result, the key program facilitators and barriers that we discuss below apply to all of the components.

Program management. The awardee faced several early and serious challenges, including the resignation of the project director, which resulted in delays in program implementation and enrollment. Program leaders acknowledged that many of the early challenges arose from a failure to anticipate and promptly address implementation issues. These issues included program policies and procedures such as what constitutes enrollment and disenrollment, how to deliver and return the RPM equipment, and how to distribute the incentive gift cards to the participants. The technical issues include getting the RPM equipment to interface with the EMR. After the original project director resigned, the Nebraska Medicine leadership team met more regularly (see Section C.3). This more active leadership has facilitated a more successful implementation.

Staffing. Several factors have made it difficult to hire nurse coaches. Because program funding is limited to three years, local nurses perceive the job as temporary. Other factors include the bureaucratic requirements of Nebraska Medicine's human resources (HR) department, high local competition for nurses, and lower prevailing salaries for "phone nurses" to which the HR department pegged the RIISCC nurses' salaries.² The program manager and project director/investigator worked closely with the HR department to hire nurses. They now have a clearer understanding of the internal hiring processes and how to work more effectively within them. For example, the HR department prefers to post positions in cohorts and only offers new employee orientation every other Monday.

An endocrinologist and assistant professor from the University of Nebraska Medical Center who is assigned to the Nebraska Medicine Diabetes, Endocrinology and Metabolism (DEM) Clinic has had a long-standing interest in delivering care through telemedicine, which is also her clinical focus. The RIISCC program is paying for her to spend a half day each week reviewing participants' data and discussing necessary medication changes with the participants' primary care physicians. She also facilitates communication within the clinical team by talking with primary care physicians who prefer "physician-to-physician" communication to communication with health coaches. She has been very helpful in teaching the RPM nurse coaching staff about different medications.

Recruitment and enrollment. Nebraska Medicine initially found it difficult to meet its enrollment goals because of a number of early challenges, including (1) patients being discharged early in the day, making it difficult for program staff to meet with them before they leave; (2) the EMR-based set of criteria for identifying eligible patients missed many eligible patients; and (3) patients declining to participate at a higher rate than expected. Further, the program has faced difficulties in contacting patients after enrollment. Patients may not answer a call from an unknown number or listen to their voicemail messages.

Nebraska Medicine addressed the enrollment issue on several fronts:

- The awardee abandoned its plan to divide eligible patients into separate enrolled and control groups, so all eligible patients now have the opportunity to participate.
- Nurses were asked to arrive at the hospital earlier in the day so that they can meet with patients before they are discharged.

² Phone nurses are nurses who do not have direct contact with patients.

- Bellevue Hospital and Bellevue Clinic joined the program in quarter 3. The hospital added more discharged patients to the program, and the clinic expanded the geographic range of the program within metropolitan Omaha. The addition of the Bellevue clinic and participation from one of the clinic's family medicine physician champions also raised awareness of the program among other physicians.
- The Nebraska Medicine DEM clinic director communicates with the diabetes educator at the Bellevue Clinic to enhance communication across sites.
- Recruitment and enrollment criteria were changed to include patients within 72 hours of discharge rather than only at discharge, but this introduced logistical challenges and required new policies because the patients were at home rather than at the hospital.

Installation of RPM equipment. Home installations of the RPM equipment resulted in several new challenges: reimbursing the MAs for mileage and parking; dealing with participants' homes that were potentially unsafe for MAs (for example, the presence of unrestrained animals and being located in high-crime neighborhoods); providing cell phones to the MAs so that they do not have to disclose their personal cell phone number to participants; and the logistical challenges of packaging, delivering, and installing the RPM equipment. As a result, the program requested permission from CMMI to reallocate funds to cover local travel and provide cell phones. CMMI approved the request. The project director/investigator, program manager, and lead nurse have since developed policies and procedures that address home safety, communications, and other logistical issues.

Health information technology. The Nebraska Medicine and Bellevue Hospital's EMR, Epic, greatly facilitates program implementation. Each day, a computer program (known as a "script") based on a set of program eligibility criteria generates a "pull list" of eligible patients who are being discharged from Nebraska Medicine and Bellevue. To address the enrollment challenges, Nebraska Medicine changed the script with guidance from the vice chancellor of the University of Nebraska Medical Center, who is a practicing diabetologist and an EMR expert. For example, the distance range of the zip codes used to identify eligible patients was expanded. Patients who were once excluded are now re-evaluated for eligibility on subsequent discharges. In addition, many eligible patients were excluded because hospital staff often failed to check a box denoting English as a language preference. This checkbox is not a good indicator of whether the patient speaks English, and it is no longer one of the eligibility criteria. The number of eligible patients identified from the EMR doubled after these changes were made.

An interface that allows patient data from the Cardiocom system to be transferred into Epic at Nebraska Medicine and at Bellevue Hospital facilitates communication and collaboration between the health coaches and the patients' primary care providers. A Cardiocom-Epic interface committee was formed to develop and test this interface. A new section of the Epic medical record has been set aside for telemedicine encounters to display the RPM data along with the coaching notes. Clinicians involved in the program are highly satisfied with the Epic interface. A Nebraska Medicine leader reported that this interface would "support the clinical workflows and sustainability of the program."

Nebraska Medicine also established a mechanism to compile and electronically link not only the data that are available from Epic and Cardiocom but also the data generated at various stages of the program. For example, data are generated from enrollment encounters, information gathered by the MAs while setting up equipment at a patient's home, the 90-day visits, post-intervention tracking, and at other times. Nebraska Medicine is using iPads and REDCap (Research Electronic Data Capture, a web-based software tool) to capture and upload data from the patients and to help manage the program database. The streamlined process and the new unified database will help Nebraska Medicine to evaluate health outcomes and conduct the economic analyses necessary for developing a payment model. Future quarterly reports will be also produced more efficiently.

Despite these successes, Nebraska Medicine faced some technical challenges. For example, the program staff realized that they should have taken more time to develop the interface between the Cardiocom system and the EMR before enrolling patients. Some patients completed their 90 days in the program before the staff could take retinal images and send them electronically to Truhlsen Eye Institute through Epic. It was not until the end of May 2015 that the program could start taking the patients' eye images.

Health coaching. During the first 90 days, the patients receive RPM and health coaching. The latter includes a personalized collaborative care plan, customized education, weekly coaching and educational phone calls, nutritional counseling, diabetic retinopathy screening, daily support for questions and concerns, and technical support for the equipment. The nurses build

"Studies show that patients just don't remember probably 80 percent of what they're taught when they're discharged from the hospital. And so someone like me can break all that information down, and talk to them every week about it. . . . We are their lifeline."

— Health coach

relationships with the participants, which contributes to the success of the program. One of the nurses wondered whether she would be able to "touch" patients (that is, to establish a close personal rapport) and help them remotely; she found that she has been able to establish such relationships in another way than through traditional face-to-face meetings. She now feels that telemedicine is "one of nursing's best kept secrets" and that nurses serve as a "lifeline" to patients.

During the health coaching process, the MAs and nurse coaches work together closely to understand their patients and coordinate their care. The fact that both types of staff are in the same office supports the free flow of communication. While the MAs are installing the RPM equipment in a participant's home, they talk with the participant and his or her family and make a point of learning about the family and the participant's hobbies and pets—points of discussion that the MAs can convey to the health coach and thereby set the stage for the rapport that the coach will want to develop with participants starting with the very first phone call. The program staff also see the benefits of providing counseling by telephone in participants' homes rather than during office visits when providers are rushed. As one senior leader noted, "The health coaches are able to educate patients at a pace and in an environment that is conducive to learning."

"I had a patient who had a few toes amputated on one foot, and she just had toes on another foot amputated. She said, 'I'll be honest with you, I didn't check my blood sugar in six months. I don't have any money for medications.' She started checking her blood sugar and taking her medication, and she then saw her surgeon. Her amputated toe was healing well, like a person who didn't have diabetes. . . . Or another patient noted, 'My vision is not blurry anymore because my blood sugars aren't 500.' So it's really nice to have patients correlate their high blood sugar with a consequence."

— *Health coach*

Besides the many anecdotes and testimonials from participants, Nebraska Medicine's analyses of its own program monitoring data demonstrates an improvement in the blood glucose levels of roughly two-thirds of participants who complete the 90-day program. At the end of quarter 4, among participants who completed the program, the awardee reported the share with hemoglobin A1c levels above 9 dropped 71 percent compared with baseline values.

Nebraska Medicine would like to improve this completion rate, but it can be difficult for program staff to anticipate and address some of the reasons that explain why participants do not complete the program, such as losing their telephone service during the 90-day period.

Telemedicine strategy. The RIISCC program is one small part of the broader telemedicine portfolio at Nebraska Medicine. The chief transformation officer strongly supports telemedicine through RPM and is working to expand Nebraska Medicine's use of telemedicine because it "is the way health care is going to go—for diabetes care in particular but also for blood pressure monitoring and other kinds of chronic disease management." The awardee is considering both centralized and decentralized approaches to future telemedicine efforts. A centralized approach, in which all telemedicine services are housed

"We see this as being the future way where we're caring for a large number of our patients. We have patients that travel a great distance as well as having other physical or financial limitations that pose challenges to getting into the health system itself. They may be from a socioeconomically depressed area, maybe even urban and down the street, but accessing health care services is a challenge to them. We are not just caring for a patient when they have a gown on and are sitting in front of a physician, but using the home environment and the information that's captured within the home environment to paint a picture of who this person is and how they manage their conditions like diabetes."

— *Senior leader*

within one department or program area at Nebraska Medicine, may be easier to manage, fund, and implement in the short-term. A decentralized approach, in which each department has its own RPM program, may be a more sustainable approach in the long-term. It now costs Nebraska Medicine about \$1 million per year to provide telemedicine services. There is no payment for these types of services in the state, although the awardee is working with the state and the U.S. Department of Health and Human Services to identify new payment models that would provide sustainable reimbursements to providers who offer telemedicine services. As Nebraska Medicine's chief transformation officer noted, "Having telemedicine grow and be successful is a part of the transformation of the whole organization."

3. How does the awardee make decisions about program-related changes?

When the original project director resigned in June 2015, the senior leaders at Nebraska Medicine and at the University of Nebraska Medical Center appointed an acting project director who also serves as the investigator. The current project director/investigator makes decisions about the RIISCC program overall. He meets regularly with the participating clinical staff at both Nebraska Medicine and the University of Nebraska Medical Center, the program manager, and the lead nurse to review clinical and operational issues, and to troubleshoot problems. Given the relatively recent departure of the original project director, the leadership transition is still in progress, although it was nearly complete as of December 2015.

“All the things that we do are very, very consultative and collaborative because it’s much easier that way. The outcome is much better than if one person had to make all of the decisions and think about all the rules, so we all get together and as a team process, we develop all of these policies. I personally enjoy the process. It’s like problem solving; how to construct structures that become helpful and easier for the program.”

— Project director/investigator

The vice chancellor for research at the University of Nebraska Medical Center oversaw the transition and moved to engage additional clinical faculty in the program, including a family medicine physician and clinicians at both the medical center and Nebraska Medicine who are involved in diabetes care. The leadership team (including the vice chancellor, the new project director/investigator, the co-investigator, the program manager, and the lead nurse) met weekly during the transition to continue to operationalize the program, draft policies and procedures, and develop a strategy for data management. As the transition progressed, the team reduced its meetings to monthly.

One example of a program-related change under consideration is to extend RPM beyond 90 days for some participants (and making corresponding changes to the payment model) because several of the frontline and leadership staff feel that 90 days is too short a time to achieve long-term, sustainable change in a person’s self-care behavior. One nurse noted that participants are just beginning to improve at the end of the 90 days and thought that returning the equipment might impede their progress. She attributed some of the improvements in hemoglobin A1c levels to the participants’ perception that “someone’s watching, someone cares,” so ending the monitoring portion of the program might cause participants to revert to their old habits.

Nebraska Medicine is gathering data on patient satisfaction at the conclusion of the 90-day RPM period. During the 90-day visit, the MA gives the participant two questionnaires—one about health and one about his or her experience in the program. This feedback from participants is important and will be used to support and potentially improve the program.

4. To what extent has the awardee begun to plan for or implement payment reforms?

Nebraska Medicine is making progress in developing a bundled payment model that covers the services provided by its telemedicine team, including primary care physicians, nurses, MAs, dietitians, and ophthalmologists in the medical centers and in the community clinics. A decrease

in ED visits and hospitalizations will offset the payers' costs associated with the telemedicine services. Payers would reimburse providers for telemedicine services at a per capita and per episode rate that was mutually agreed upon, which would allow payers to share savings (and risk) with providers.

Nebraska Medicine will target Medicare Part A in the payment model because it covers home health services and the RNs and registered dietitians who provide RPM services in the home. Medicaid payment is also being proposed by Nebraska Medicine because some participants are covered by Nebraska Medicaid. The awardee has been working with Blue Cross and Blue Shield (BCBS) of Nebraska to gain support for the payment model and to obtain claims data for BCBS beneficiaries who are enrolled in the program.

To determine a reasonable charge rate, staff at Nebraska Medicine are assembling information about (1) the number of participants an RPM coach can safely monitor, (2) the costs of providing the 90-day RPM services (per installation and per daily upload of information), and (3) the potential for a small surplus from the services. The staff recognize that the rate must be favorable to providers and payers. Nebraska Medicine also noted that it is not always clear where the costs and benefits accrue with improved A1c control.

RIISCC disproportionately serves low-income and uninsured patients. Nebraska Medicine is being cautious about adding co-pays or deductibles to the program, as they might deter these patients from participating in the program. The awardee plans to build in incentives (reduced or waived co-pays) for patients who have adhered well to the telemedicine program and who have showed positive outcomes through the guided self-management of diabetes.

The program is competing for space in the three partner clinics that house the telemedicine equipment for the 90-day visits. If telemedicine equipment is housed in clinics in the future, Nebraska Medicine may need to factor a facility use fee into the payment model for the use of clinic space.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we conclude that a rigorous impact analysis is feasible. The best analytic approach, in our view, is a difference-in-differences design that contrasts changes in outcomes for patients covered by Medicare fee-for-service (FFS) and discharged from Nebraska Medicine in the years before and after implementation of the RIISCC with changes in outcomes for similar patients discharged from other acute-care hospitals in Omaha, Nebraska. The projected sample size should be sufficient to detect impacts on beneficiary outcomes that are at least as large as those expected by the awardee.

E. Next steps

We look forward to continuing to work with Nebraska Medicine for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next step in the impact evaluation is to identify and pull claims data for the treatment and comparison groups. We will measure all outcomes using Medicare FFS claims data obtained from the Virtual Research Data Center within the Chronic Conditions Warehouse. We do not expect data quality problems. We will not seek Medicaid data, given the small number of Medicaid enrollees expected.

As mentioned, we plan to use a difference-in-differences design that contrasts outcomes for cross-sections of treatment and comparison group members in the pre- and post-intervention periods to estimate the impact of the RIISCC program. Outcomes will be measured for patients discharged from all hospitals in the period from September 2012 to August 2014 (the pre-intervention period) and from September 2014 to August 2017 (the post-intervention period).

The comparison group will be Medicare beneficiaries who reside in Douglas or Sarpy counties, Nebraska, who were discharged to home from any of the six general medical-surgical hospitals other than Nebraska Medicine in Omaha (CHI Creighton, CHI Health Immanuel, CHI Bergan Mercy, Methodist Hospital, and Veteran's Affairs Medical Center) with a diagnosis of Type II diabetes or Type II diabetes and a secondary diagnosis of heart failure, hypertension, or acute myocardial infarction between April 2012 and March 2014 (the pre-intervention period) or between April 2014 and March 2017 (the post-intervention period).

We will select the comparison group from the group defined just above by using propensity score matching to select patients who resemble the treatment group in terms of demographic variables and health care utilization and spending in the 24 months before the index hospitalization. After arriving at a candidate comparison group, we will assess whether the distribution of propensity scores is similar for the treatment and comparison groups and whether the means of each covariate used to estimate the scores are similar for the treatment and comparison groups. If the covariates are unbalanced, we will modify the specification of the

underlying logistic model, possibly removing variables that appear less important or adding interactions of explanatory variables until a balance is reached. We will report measures of covariate balance in future reports. Additional detail on our plans for the impact evaluation appears in the evaluability assessment report submitted to CMMI on November 13, 2015.

We do not plan to collect data from other sources for the impact evaluation, though we hope to arrange for access to participants' BMI and hemoglobin A1c measurements over time. Although these variables will not be available for the comparison group, the RIISCC program is expected to result in improvements in these measures for most participants. The implementation team is working closely with Nebraska Medicine to collect information on program activities and identify data elements that could inform the impact evaluation in useful ways.

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APPENDIX B.24

NORTH SHORE-**LONG ISLAND JEWISH** HEALTH SYSTEM

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REPORT

APPENDIX B.24

HCIA Round Two Evaluation: North Shore-Long Island Jewish Health System

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 2, 2015)

Successes

- Developed a data dashboard to self-monitor internal process and outcome metrics
- Achieved buy-in to the model from clinicians

Challenges and strategies to address them

- Took longer than expected to launch new sites of service
 - Now that all sites have been established, program should catch up to projected enrollment
- Late referrals
 - Educating the community and clinicians about the importance of early identification and referral

Lessons learned

- Engage both physicians and patients
- Include a conservative care model as a modality—that is, a model in which participants with end-stage renal disease receive palliative care rather than dialysis

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 2, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to: (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee’s early implementation experiences
3. Assess the facilitators of and barriers to each awardee’s success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Healthy Transitions in Late-Stage Kidney Disease program (Healthy Transitions), which is being implemented by the North Shore–Long Island Jewish Health System. In this document (referred to as a “narrative”), we examine this program’s first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of North Shore’s Healthy Transitions program, including initial implementation experiences, initial challenges to and successes with enrollment, and participation and engagement with stakeholders such as partners and collaborating organizations. This report presents findings from our analysis of qualitative data gathered through a review of the awardee’s application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to North Shore, and a review of North Shore’s reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of North Shore’s program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the impact evaluability assessment for the Healthy Transitions program and identify next steps in our evaluation.

A. Introduction

Healthy Transitions is a patient-centered care program that aims to integrate and coordinate all aspects of care for chronic kidney disease (CKD). It works to manage key drivers by providing care coordination supports for nephrology services to improve patient outcomes and reduce the high cost of CKD care. The program focuses on managing issues associated with the disease, such as metabolic complications, comorbidities, hospitalization burdens, and preparation

for end-stage renal disease (ESRD) treatment. North Shore has partnered with six practices in four counties in the metropolitan New York City area to implement the Healthy Transitions program: (1) Manhattan, (2) Nassau, (3) Queens, and (4) Suffolk counties. Because many of the practices operate in multiple locations, Healthy Transitions is currently operating at 13 sites.

Healthy Transitions focuses on changing participant and provider behavior by shifting the nephrologist-based care model to a greater reliance on nurse care managers, who can have more personal relationships with the participants and can guide them through the complex care system. The awardee believes that this improved model of disease management led by registered nurse (RN) care managers will lead to improved outcomes and better preparation for ESRD, which will ultimately lower costs.

Typically, advanced kidney disease (AKD) steadily progresses to ESRD, which in turn necessitates treatment with dialysis to replace the function of kidneys and to sustain life. The severity of kidney disease is categorized by stages determined by the patient's level of kidney function. Kidney function is measured by estimated glomerular filtration rate (eGFR), which is expressed in milliliters per minute (ml/min). Lower values of eGFR signify worse kidney function. Stage 1 kidney disease is associated with an eGFR of 90 ml/min or higher. Stage 2 is associated with an eGFR of 60 to 89 ml/min. Stage 3 is associated with an eGFR of 30 to 59 ml/min. Stage 4 (generally considered to be AKD) is associated with an eGFR of 15 to 29 ml/min and stage 5, ESRD, is associated with an eGFR of fewer than 15 ml/min.

There are several types of treatment options (or modalities) available to patients with ESRD. These are listed below in order of their ability to provide (1) effectiveness in replacing kidney function, (2) freedom from complications (such as infections or clotting of blood vessels), and (3) health-related quality of life.

- Pre-emptive kidney transplant (that is, performed before progression to ESRD, which is the only “cure” for ESRD; although, patients must still take drugs to suppress their immune systems and prevent rejection for the rest of their lives)
- Home dialysis (peritoneal dialysis)
- Conservative care (palliative approach, in which the patient receives no dialysis)
- Hemodialysis in an outpatient facility, with an arteriovenous fistula (AVF)
- Hemodialysis in an outpatient facility, with a dialysis catheter

The Healthy Transitions model is to intervene early enough in the disease progression to enable patients to undergo the surgery to create an AVF (after surgery the fistula takes a few months to heal and mature before it can be used for dialysis) and to avoid hemodialysis with a catheter (catheters are often prone to infection, often result in scar tissue on the heart, and may cause blood clots). The model includes home visits to determine whether the patient has sufficient family support and an adequate home environment to support peritoneal dialysis. The RN care manager's conversations with the patient and family are intended to enable them to

make the appropriate modality choice. In addition, they educate the patients about diet and exercise to slow the progress of the disease and delay the start of dialysis for as long as possible. This approach is patient-centered and is designed to improve quality of care and reduce costs for Medicare. However, in order for Healthy Transitions to be effective, patients must be referred to the program early enough in the progression of their kidney disease so that they may benefit from the program's interventions. If patients are referred to the program too late, there is little time before they must start dialysis—often urgently and hastily, without a chance to make informed and intelligent choices.¹

1. Program goals

- To improve patient education and shared decision making regarding dialysis and transplantation
- To increase the percentage of individuals with AKD who actively choose and prepare for home dialysis modalities and pre-emptive kidney transplants, and to improve the individuals' quality of life
- To reduce by 30 percent the total costs of care in late-stage kidney disease, largely through reduction in hospitalization and emergency department (ED) utilization and harmful delays in the initiation of dialysis treatment

2. Target population

The Healthy Transitions program is a disease management program for individuals with AKD (stages 4 and 5). The program excludes individuals who have reached ESRD or dialysis. To be eligible for the program, participants must be covered by a nonmilitary payer (Medicare, Medicaid, or commercial insurance) and meet three other criteria:

- Be at least 18 years old
- Have an eGFR less than 30 ml/minute
- Have no clinically apparent cognitive impairment

The current payer mix is about 50 percent Medicare, 20 percent Medicaid (about half of whom are dually eligible for Medicare as well), and 30 percent commercially insured. The North Shore project does not involve interaction with any other payers, even though Medicaid and commercially insured patients are eligible. Other key characteristics of the Healthy Transitions program are listed in Table 1.

The Healthy Transitions team shared with us a dashboard report during the site visit, which is included in Section F. The report indicated that almost all of the participants were identified as

¹ The Healthy Transitions team has suggested to the nephrology community that there be ICD-9 (and now ICD-10) codes added that reflect a stage 4A (eGFR of 20 to 30 ml/min) and stage 4B (eGFR of 15 to 20 ml/min). Intervening by stage 4B would be ideal for the Healthy Transitions model.

having hypertension, almost half had diabetes, and almost one-quarter had congestive heart failure (although, the staff believe this latter figure is understated, because patients are not familiar with this term). About one in ten participants are smokers, which is somewhat lower than staff expected, perhaps due to the program's smoking cessation efforts.

Table 1. North Shore: Healthy Transitions characteristics at a glance

Program characteristic	Description
Purpose	A patient-centered program that aims to integrate and coordinate all aspects of care for late-stage chronic kidney disease (CKD) by (1) focusing on patient education and care management to delay the onset of end-stage renal disease (ESRD) and (2) helping patients make informed choices about ESRD treatment that reflect their personal preferences.
Components	Care management (primary), shared decision making (primary)
Target population	Individuals with late-stage CKD (stages 4 and 5) who meet the following requirements: (1) are at least 18 years old; (2) have an eGFR (estimated glomerular filtration rate) less than 30 ml/minute; and (3) have no clinically apparent cognitive impairment.
Theory of change/theory of action	The awardee focuses on changing participant and provider behavior by shifting the nephrologist-based care model to a greater reliance on nurse care managers who can have more personal relationships with the participants and can guide them through the complex care system. The awardee believes that this improved model of disease management led by registered nurse (RN) care managers will lead to improved outcomes and better preparation for ESRD. This will ultimately lower costs.
Payment model	Bundled payment, value-based purchasing Bundled payment for CKD on a per beneficiary per month basis that includes 3 components: (1) care coordination codes for education, follow-up visits, and psychosocial services; (2) transitional care codes for peritoneal dialysis catheter, arteriovenous fistula (AVF) placement, transplant, or conservative care; and (3) a penalty tied to failure to meet outcomes and quality metrics, such as having dialysis initiated in the hospital or receiving a catheter for hemodialysis (model proposed as of September 30, 2015).
Award amount	\$2,453,742
Launch date ^a	November 17, 2014
Setting	Patients' homes, practice offices
Market area	Urban, suburban
Market location	Manhattan, Nassau, Queens, and Suffolk counties in New York
Core outcomes	Patients better prepared for ESRD care; increased patient selection of modality; increased AVF rate; increased quality of life score; save \$1.9 million for 593 participants

^a After a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by North Shore to the implementation and monitoring contractor covering the first year of the cooperative agreement (September 2014 to August 2015) and (3) data gathered during initial telephone discussions with the awardee May 19, 2015, our site visit to the Healthy Transitions program from September 28 through October 1, 2015, and telephone discussions with a participating nephrologist on October 2, 2015. For our

document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed program leaders, frontline staff, and other program stakeholders at Healthy Transitions. We visited North Shore's Great Neck, New York, location, which houses the program headquarters, a nephrology practice, and a dialysis center. We also held a follow-up telephone discussion on October 2, 2015, with a nephrologist who practices at another Long Island location, because he was not available to meet with us during our scheduled site visit. In addition to meeting with awardee leaders and an off-site nephrologist, the site visit included interviews with key personnel responsible for dialysis services, the public education team at the Janet and John Raggio Nephrology Institute (the Raggio Institute offers education about kidney disease to high-risk patients), the in-house nephrology practice, and the RN care managers.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved interrater reliability on coding; and applied codes to identify program components, research questions, and concepts that described the implementation experiences. The team then extracted text from the transcripts pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this report on Healthy Transitions' implementation experience.

C. Findings

1. How effectively has the program been implemented?

Our assessment is that the Healthy Transitions program is being implemented fairly effectively. Enrollment is slightly below projections but not substantially so, and program staff believe that they will catch up soon. Bringing on additional sites has taken longer than anticipated, but the added sites are all projected to go live by the end of the fifth quarter. Staff are generally pleased with quality measure results, although there are certain metrics for which they would like to see further improvement (for example, AVF placement rates).

Regarding design changes, we identified four significant changes to the program design: (1) adding the conservative care management modality, (2) modifying the self-monitoring measures, (3) addressing late referrals, and (4) developing a payment model.

1. **Conservative care management.**

Subsequent to submitting the application for an HCIA R2 award, Healthy Transitions staff began working with their medical advisory board to develop and implement protocols for a palliative approach that does not involve dialysis. Once the approach was refined, the conservative care management option was added to the modality selection form.

“We cannot offer dialysis to everybody—the 96-year-olds—it’s not the right thing to do. We’re not giving people a dignified end to their life; we’re causing them, very often, a lot of pain and discomfort. The medical science on this has evolved very quickly. And we recruited from Mt. Sinai an expert on palliative care and end of life issues for kidney disease. What the science has shown now . . . is that for people over 80 who have comorbidities, you live just as long whether you do dialysis or whether you do conservative management.”

— Program staff member

2. **Self-monitoring measures.** The Healthy Transitions program is having participants complete two validated and published questionnaires every six months—(1) the Kidney Disease Quality of Life (KDQOL) survey and (2) the nine-question Patient Health Questionnaire (PHQ-9), which can be used to screen for depression and other mental health problems. Healthy Transitions leaders are reviewing the KDQOL data on a weekly basis to monitor enrolled patients’ progress compared to their individual baseline status.

The Healthy Transitions tracking system began generating a new kind of report shortly before we made our site visit. This report lists patients by (1) number pending placement of fistula, (2) number of days since enrollment, (3) how many fistulas are mature, and (4) number of days since the fistula placement surgery. These data help care managers track where participants are in their progression to ESRD, whether participants have accomplished key milestones in this progression, and which participants require follow-up.

3. **Late referrals.** During the first several months of the program, program staff were finding that participants were much sicker than anticipated, partly due to patients being referred to the program too late in the progression of their kidney disease. Healthy Transitions then had little time to intervene with these participants before they would have to undergo dialysis. Healthy Transitions is conducting community outreach in conjunction with the Raggio Institute to inform patients about the importance of early intervention in kidney disease. They have also begun to strategize about how to communicate the need for early intervention to nephrologists and primary care physicians—for example, through the “grand rounds” at local hospitals (the large educational conferences for physicians that are typically held weekly).

One of the program staff members pointed out how late referrals could adversely affect Healthy Transitions’ performance on the quality measures that the program is using to monitor itself. Healthy Transitions is enrolling all patients referred to the program, even those referred too late in the disease process to get a fistula. These patients then wind up initiating dialysis through a catheter, which reflects unfavorably on the program’s performance metrics. Patients referred to the program too late may receive better care and patient education than had they not entered Healthy Transitions, but the late enrollment has a negative effect on the program’s measure results.

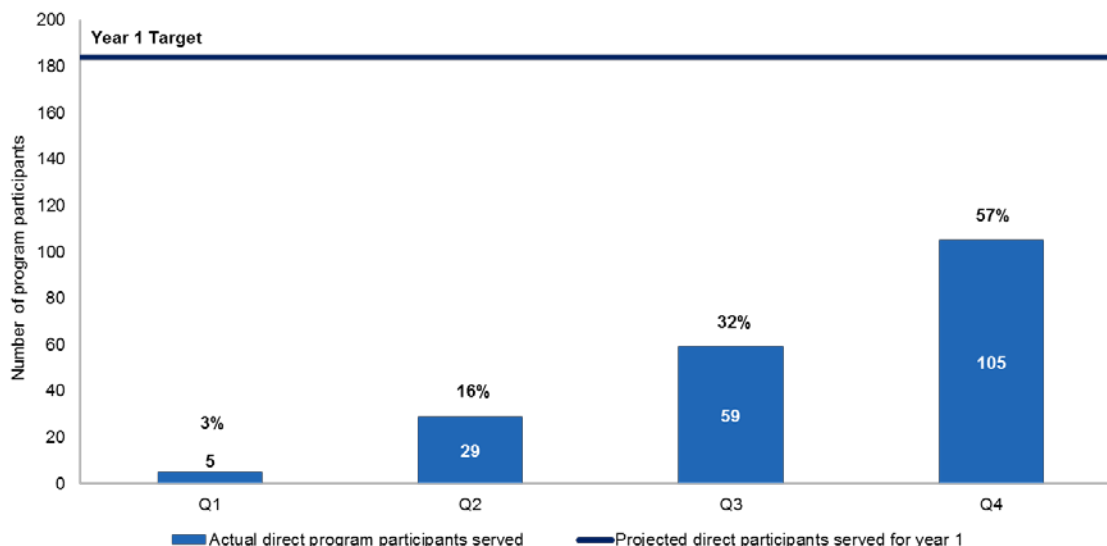
To address this challenge, Healthy Transitions determined that RN care managers should focus on helping patients who have eGFR levels lower than 20 ml/min who have not made modality decisions. This has been accomplished in part by using the social worker in an additional capacity to talk with patients about their goals for care, which frees up more of the RN care managers' time.

4. **Payment model.** North Shore had included a payment model in the application for an HCIA R2 award, but the Center for Medicare & Medicaid Innovation (CMMI) did not approve that payment model as part of the award. However, CMMI subsequently directed North Shore to incorporate a payment model into the award structure. North Shore submitted a revised payment reform proposal on September 30, 2015. North Shore and Healthy Transitions staff worked with the National Kidney Foundation to develop this revised reimbursement approach. The new proposed payment model would be a per beneficiary per month (PBPM) bundled payment for CKD care with three components: (1) care coordination codes for an initial home visit, follow-up visits (including tele-health, dietary education, and psychosocial services); (2) transitional codes for modality selection (peritoneal catheter placement, AVF placement, transplant, or conservative care management); and (3) a penalty for suboptimal patient preparedness (as indicated by initiation of dialysis in the hospital or hemodialysis with a catheter instead of AVF).

a. Did the program reach the target population as intended? Why or why not?

The program reached the intended target population; however, the intended population consisted of patients whose kidney disease, though advanced, was not so advanced that they were about to progress to ESRD in the very near future. As mentioned earlier, the program enrolled more late-stage participants who had been referred to the program too far advanced in the progression of their kidney disease for the intervention to be effective.

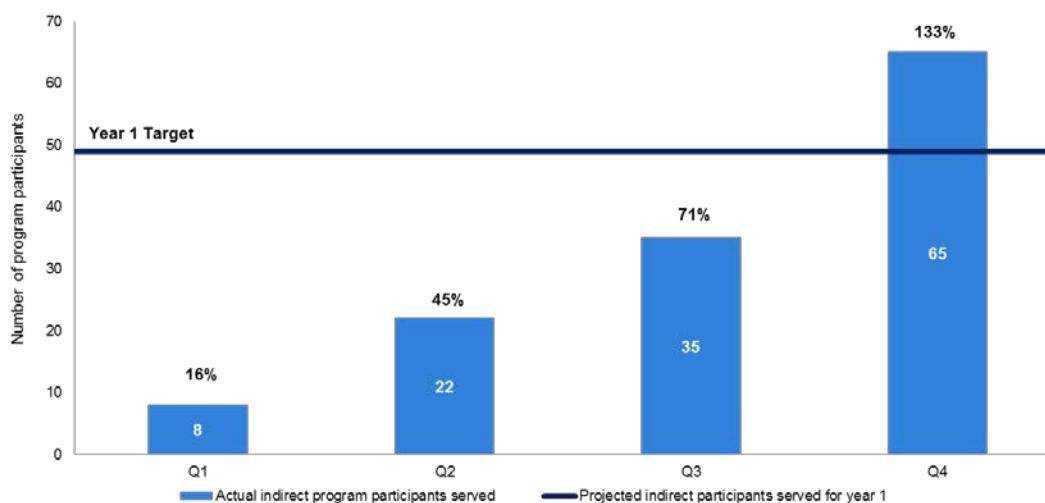
Figure 1a. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter.

Figure 1b. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter.

b. Was the program implemented in the original timeline? What changes were made and why?

The award started September 1, 2014. Healthy Transitions enrolled its first patient on November 17, 2014. At the time of our site visit, roughly 10 months after the first patient enrolled, there were 192 actively enrolled participants, compared to the projected enrollment of 233 participants at one year.

The main reason for the level of enrollment was a prolonged process in bringing practices into the project. One example is a nephrologist with a busy practice who is a part of a larger physician group with multiple locations across large portions of Long Island, from western Nassau to central Suffolk. Healthy Transitions staff noted that there were unexpected delays due to legal requirements sought by this physician group and the need to draft business agreements addressing these requirements, which included concerns regarding the potential for self-referrals, kickbacks, and Stark violations. By the time of our site visit, the business agreement and data use agreement had been signed by both parties and the Healthy Transitions program had been rolled out to two of the four practice locations, with the other two expected to start by the middle of the fifth quarter. In addition to this physician's practice, two physician groups in Manhattan joined the program in July 2015.

"I think we've made very good progress. . . . Enrollment right now is at full speed. We're enrolling exactly at the rate we should be now, [but we] definitely bruised our knuckles along the way. We've made a couple of mistakes, [but we have] learned further"

— Program staff

Although the rate of enrollment is below projections, the numbers are almost on track with expectations. One Healthy Transitions staff member commented that leaders may have been overly optimistic in estimating the time it would take to add physician practices, but that enrollment had now increased to the point at which the program had a chance to reach the

Year 1 goal of 233 participants. This staff member added that if enrollment slowed, the program could try adding one or two more sites—although, adding new sites past the second half of Year 2 would not be ideal.

Healthy Transitions staff calculate enrollment projections on a weekly basis. During our site visit, they stated that the program would reach the Year 1 target of 233 participants. A program staff member observed that since that busy Long Island nephrologist had joined Healthy Transitions, the program had enrolled another 25 to 30 patients, even before all four of the nephrologist's practice locations had started participating. The staff member commented that the program's enrollment had begun to catch up to projections in the few months preceding our site visit, and once the program expanded to Manhattan as planned, enrollment would be even higher.

c. Quality measures

During our site visit, we discussed the program's progress on several of the internal performance metrics.² One measure program leaders are pleased with is peritoneal dialysis—the program's rate is more than three times the national average. Although the AVF rate is higher than the national average, the Healthy Transitions staff would like to see the rate improve significantly (the difference may be due to the sicker patient pool discussed earlier, who are referred too late in their kidney disease progression to have an AVF placed and end up being dialyzed urgently through a catheter). Similarly, the hemodialysis catheter rate is better than the national average, but not as low as they would like it to be. One measure the program has clearly had a positive impact on is advance directives: 34 percent of participants had an advance directive at intake; North Shore raised the figure to 49 percent of participants. Another measure leaders are currently satisfied with is modality selection: about three-quarters of participants have selected a modality, compared to an estimated national figure of less than one-third of patients with kidney disease.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The two components of Healthy Transitions—care management and shared decision making—are closely linked. Although we are distinguishing between these two components for evaluation purposes, the program staff consider them to be part of an integrated program. As a result, the key program facilitators and barriers that we discuss below affect both components.

a. Primary component: care management

Facilitators

- **The program team was able to build on work done for a previous pilot project, so they did not have to start Healthy Transitions from scratch.** The North Shore nephrology team launched a similar pilot project in October 2012 and had already begun communication with providers in the community. In addition, educational materials; checklists; and a tracking database with measurement tools, alert reports, scorecards, and dashboards had already been developed prior to starting the Healthy Transitions grant. These resources enabled the Healthy Transitions team to focus on recruiting qualified care managers.
- **The Healthy Transitions informatics and tracking system provides data that are useful to program leaders and case managers.** The informatics system provides program-wide data, based on trends or aggregated data, on a daily basis. The daily reports help inform care managers about which patients may need to be contacted and possibly referred for care, by using logic based on clinical protocols to trigger alerts. One of the data sources is a

² North Shore self-monitors a set of internal performance metrics. The metrics discussed here are from the awardee and have not been verified by us.

telephonic system that patients use to enter their weight on a daily basis; nurses are therefore notified of any sudden weight gains, which is a clinical indicator of kidney problems.

Challenges

- **New practices participating in Healthy Transitions have different electronic medical record (EMR) systems.** Because the new practices do not have the same EMR as North Shore, it is challenging to include their data in the informatics and tracking system.
- **The fee-for-service (FFS) payment incentives act counter to effective nephrology practice.** According to one of the interview subjects, the financial incentives are “backwards”—meaning that nephrologists make less money if a patient gets transplanted, even though that is the best treatment for patients. Despite the prevailing financial incentives, most clinicians have been receptive to participating in Healthy Transitions. However, to illustrate the extent of the challenge, staff gave an example of a community physician who, when asked to partner on the project, told them: “I’m going to lose money on this ... I’ll get a higher reimbursement if I initiate [dialysis] in the hospital and do the consult in the hospital, rather than going through your program.”
- **The design of the model may make it difficult to fully assess the impact on saving Medicare expenses.** One program staff member noted that the program might have difficulty using its own self-monitoring data to demonstrate benefits on reduced expenditures. The program may have done such a good job preparing a patient for dialysis as an outpatient instead of as a hospital inpatient that it saved \$15,000 and enabled the patient to have a better experience of care. But those savings will not be seen in the program’s monitoring data.

Strategies developed to address challenges, by component

- **Creating a program to increase the number of participants who have fistulas.** Healthy Transitions developed the Countdown to Fistula program, which is an enhanced version of the Fistula First Catheter Last program developed by the Centers for Medicare & Medicaid Services (CMS)—a program implemented by the ESRD National Coordinating Center to increase AVF use and reduce central venous catheter use. Countdown to Fistula features more systematic follow-up to make sure that newly created fistulas have had adequate time to mature and are functioning before the progression to ESRD.
- **Revising health IT systems.** To address the concerns regarding multiple EMRs and missing data, Healthy Transitions plans to use some of the funding from the first year in the second year to improve the technology that supports the informatics and tracking system. Program staff intend to enhance their server speeds to make it easier for nurse care managers to enter data and to reduce the extent of missing or late data from the system. The enhancement will also automate data feeds from multiple EMR systems, reducing the labor required to manually compile the data and increasing data accuracy.
- **Developing and implementing approaches to overcome perverse FFS payment incentives.** In addition to developing a payment model that offers appropriate incentives, the

intervention offers a nurse care manager to support the nephrologist. The project is designed to deliver higher quality of care, a safer patient environment, and raise patient satisfaction scores. For the nephrologists who are participating in the program, it appears that the supports offered by the nurse care managers—and the services they offer to their patients—overcome the financial disincentives.

b. Primary component: shared decision making

An essential aspect of the intervention is to educate patients about their modality options so that they make the most appropriate modality choice. This communication must take place at an early enough stage in the disease process so that all modality options are available to the patient. The early identification of patients requires timely referrals from primary care providers.

“One of the critical steps in treating AKD is you’ve got to get to the point where you reach a decision with the patient in terms of when they subsequently reach ESRD [about] what is going to be the modality they’re going to choose. If you don’t make that decision, nothing works well and you crash on to dialysis. That’s why in the U.S. 81 percent of people have catheters instead of fistulas on day one of dialysis.”

— Program staff

Facilitators

- **The grant award enables sufficient time to meet with patients and their families.**

According to Healthy Transitions staff, it takes several visits to establish the dialogue and

“What’s key is that we all start off with the same question when we come in, which sets us up for really being successful: ‘Tell me what you know about your kidney disease.’ So this lets us find out what education our patient needs, how to best engage him or her, how to really do what nurses do best and be those bio/psycho/social experts, set up a culturally sensitive care plan, and that’s what sets the tone for our visit. Because what they know initially will determine what we can teach them in that visit. Because we want to make sure that we don’t over-teach in the first visit and lose them.”

— Nurse care manager

trust with the patient, to educate the patient, and then to assist with the decision about modality. These conversations can take 90 minutes—far more time invested than during a typical 15 to 20 minutes in a physician’s office. The nurse care managers act as extensions of the physician to conduct the home visits and have the multiple conversations with patients and their families.

- **Home visits are enabling better patient assessments and providing new, key information.** During initial home visits, the care managers (1) ask participants about all physicians caring for them, (2) assess symptoms, (3) educate them about the importance of preventive services such as administering immunizations, (4) assess diet and exercise, and (5) perform medication reconciliation. The care managers also do an assessment of the home and family situation. A nephrologist gave the example of a patient who believed he could do peritoneal dialysis without assistance, but after a home assessment the nurse concluded that peritoneal dialysis

“Our biggest lesson learned is we have to engage both the physicians and the patients to be successful. If we have a disconnect on either side there, we can’t move them forward. Or, I shouldn’t say we can’t, but it sure is harder.”

— Nurse care manager

would not be safe for this patient and informed the nephrologist. Without this home assessment, the patient would have been started on a treatment program that was dangerous for this patient because of an increased risk for infection and other complications.

Challenges

- **Patients seeking care from Manhattan practices do not necessarily live in the service area.** Although the Manhattan practices were thought to help increase enrollment significantly, Healthy Transitions has found that many patients at these practices do not live in the four county service area and, therefore, they are not eligible for the HCIA R2 program. It would require too much time for the nurses to travel to and from the patients' homes for the home visits, and the shared decision making with the patient cannot be effectively implemented without the home visit component.
- **A number of participants have been referred to the program at too advanced a stage of kidney disease.** If a patient is referred to Healthy Transitions too late in the disease's progression, there will not be sufficient time to place a fistula and avoid a catheter. Late referrals prevent the optimal shared decision-making process.

Strategies to address challenges

Community and provider education to increase timely referral and understanding of the importance of shared decision making. Healthy Transitions staff have detailed conversations with potential participating nephrologists to explain the parameters of the model and to emphasize the importance of timely referral. They are developing broader provider education approaches to reach primary care physicians and hospitals, including giving talks at hospitals. The Raggio Institute works with Healthy Transitions to educate patients and their families about the importance of making early modality decisions.

c. What specific implementation changes are anticipated in the coming months?

Healthy Transitions will continue to launch new practice sites and to enhance its health IT system. The other major implementation change is related to refining and implementing the payment model, which is subject to CMS approval.

3. How does the awardee make decisions about program-related changes?

North Shore staff hold weekly meetings to review data reports and determine whether there need to be adjustments to the program model. Leaders' deliberations are also informed by evidence-based medicine (for example, the development of the conservative care management modality was influenced by research in peer-reviewed journals, presentations at conferences, and program leaders' interactions with other nephrology thought leaders) and their relationships with other CKD experts (for example, developing the revised payment model).

The tracking database informs the team about enrollment figures, caseloads for nurse managers, and key quality measures. The quality measures include immunization rates, modality selection rates, and maturation of fistulas. The weekly dashboard review includes information

such as the distribution of age, gender, race, and ethnicity; comorbidities; the number of patients enrolled; and the patient-to-care manager ratio. Healthy Transitions staff use this information to monitor progress toward the program's goals. For example, while looking at the dashboard output during our site visit, program staff noted that about half of the participants do not have an advance directive—therefore, they should increase efforts to reduce that number, because all AKD patients should have an advance directive.

The Healthy Transitions team has not yet systematically implemented a patient satisfaction survey, but they plan to do so in the next year.

4. To what extent has the awardee begun to plan for or implement payment reforms?

The payment reform model is still in the proposal stage; the current version was submitted to CMS on September 30, 2015 (during our site visit). We will follow up on the payment plan in our next round of data collection, which will be in the spring of 2016.

The Healthy Transitions payment model is influenced by North Shore's experience participating in a CMS demonstration project about seven years ago. That project included a PBPM payment to nephrologists for coordinating patient care. A Healthy Transitions staff member noted that these payments for coordinating care were surprisingly effective in getting nephrologists to align their practices with the goals of that demonstration, despite the fact that the payments were relatively small. The proposed enhancement to the demonstration project payment approach is to include pay-for-performance benchmarks, such as fistula placement surgery or having the patient see a dietician. The Healthy Transitions payment model evolved further when North Shore learned that the National Kidney Foundation (NKF) had written a letter to the Senate Finance Committee, in response to the committee's call for ideas on how to improve payment for people with chronic diseases. During the week of our site visit, North Shore reached agreement with NKF to move forward together on the payment model detailed in the September 30, 2015, submission, pending approval by CMS.

D. Impact evaluability assessment

Based on careful review of program documents, interviews with Healthy Transitions program leaders, and an assessment of data availability, we concluded that a fairly rigorous impact analysis would be feasible. The strongest possible design is a difference-in-differences model that isolates within-person changes in outcomes over time for participants in the Healthy Transitions program and compares them to an external, matched comparison group of people residing in the same four counties in New York in which the program operates (Manhattan, Nassau, Queens, and Suffolk) but who are not enrolled in the Healthy Transitions program.

The primary assumption of the proposed design is that absent the Healthy Transitions program patients in the treatment group and comparison group would have experienced a similar trajectory of outcomes, over a period spanning the year prior to inception of Healthy Transitions to one or two years after inception. There are two ICD-9 codes that identify levels of CKD—that is, which patients are in stage 4 (code 585.4) or stage 5 (585.5). (The corresponding ICD-10

codes to identify CKD stages 4 and 5 are N18.4 and N18.5, respectively.) Although patients with ESRD (ICD-9 code 585.6) are not eligible to be enrolled in the treatment group, patients who progress to ESRD during the study period will be followed for up to six months post-progression or until the end of the study period, whichever occurs earlier. Following patients up to six months post-progression to ESRD is intended to capture any differences in the distribution of dialysis modalities between treatment and comparison groups, as well as downstream cost savings that program leaders expect from improved patient education and pre-ESRD modality selection. The outcome measures for this evaluation are (1) all-cause hospitalization rate, (2) number of inpatient stays, (3) hospital ED visit rate, (4) 30-day unplanned hospital readmission rate, (5) pneumonia and influenza vaccination rates, (6) overall mix of dialysis modalities among those who initiate dialysis, and (7) proportion of patients who begin hemodialysis with an AVF in place.

E. Next steps

We look forward to continuing to work with the North Shore Healthy Transitions team for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

We have finalized the business associate agreement and memorandum of understanding with North Shore, and have received the first data transfer from the awardee. The next steps in the impact analysis include (1) matching the patients submitted via the awardee's finder file to their appropriate Medicare claims and (2) evaluating baseline characteristics of the treatment group. Once we receive appropriate claims data for the comparison group, we will descriptively analyze the two groups and begin the propensity score matching process. We will produce a table of descriptive characteristics for each group before and after matching. We will then produce initial impact estimates for the first one to two quarters of program operations, depending upon data availability, after creating our outcome and explanatory variables. We will describe our findings in future reports.

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APPENDIX B.25

NEW YORK CITY HEALTH AND HOSPITALS

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REPORT

APPENDIX B.25

HCIA Round Two Evaluation: New York City Health and Hospitals

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–November 12, 2015)

Successes

- After a slow start, the program is now meeting its monthly enrollment targets. It is fully staffed at all six sites, and eligible individuals appear to be receptive to the idea of joining the program.
- Site-based physician advisors who are program champions have educated emergency department (ED) clinicians and New York City Health and Hospitals leaders about the program, facilitated referrals to the program from clinicians, and conveyed to staff that the program is a priority for New York City Health and Hospitals.

Challenges and strategies to address them

- Enrollment was initially lower than projected because of delays in hiring staff who would have been recruiting patients and providing care management. Bureaucratic hiring processes were a key barrier to hiring staff.
- Even with a fully staffed program, carrying out program responsibilities for a large number of participants has been a heavy burden for some staff. Staff identified insufficient staffing for follow-up telephone calls and burdensome documentation and data systems as key challenges. Program leaders are working to provide a more efficient database and are considering hiring additional staff.
- Although a critical component of the program, timely access to primary care for new participants remains a significant barrier to program implementation. Program staff have partnered with the ambulatory care program at New York City Health and Hospitals to identify better pathways to care for program participants.

Lessons learned

- Recognizing that early program implementation developed without enough standardization across sites, program leaders are developing governance structures and other strategies to facilitate cross-site information sharing and the standardization of practices.
- It has been challenging for New York City Health and Hospitals to follow through with early plans to use care management to safely divert participants from hospitalization immediately after the qualifying ED visit. Some staff have therefore focused on enrolling participants who can be safely discharged from the ED regardless of whether they participate in the program, and on preventing future ED use and subsequent hospitalization.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our telephone discussions on November 12, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and

Children's Health Insurance Program costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Emergency Department (ED) Care Management Initiative, which is being implemented by New York City Health and Hospitals, formerly known as New York City Health and Hospitals Corporation. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of New York City Health and Hospitals' ED Care Management Initiative, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; recent key informant interviews conducted by telephone with program leaders; and a review of New York City Health and Hospitals' reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the New York City Health and Hospitals program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges?

3. How do the awardee and the implementing sites make decisions about program-related changes?
4. To what extent have the awardee and the implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of New York City Health and Hospitals' impact evaluability assessment and identify next steps in our evaluation.

At the request of CMMI, we spoke by telephone with program and site leaders, not with frontline staff. This narrative therefore presents an initial review of New York City Health and Hospitals' early implementation experience and may, in some cases, be less comprehensive than the other narratives in this report. We expect to speak with frontline staff during a site visit in summer 2016, and we will report on additional findings after the visit.

A. Introduction

New York City Health and Hospitals is part of the New York City government and is structured as a public benefit corporation that serves as the city's public safety-net health care system.¹ It offers care regardless of ability to pay through a network of 11 hospitals and through its skilled nursing facilities, diagnostic and treatment centers, home health agency, and community-based clinics. Most inpatient hospitalizations for New York City Health and Hospitals originate in the ED. To address potentially avoidable ED visits and hospitalizations, the awardee developed the ED Care Management Initiative to reduce such hospitalizations as well as subsequent ED visits and hospitalizations that could be prevented through supportive care. The program builds on New York City Health and Hospitals' ED care management pilot programs in all 11 of its hospitals.

New York City Health and Hospitals' ED Care Management Initiative offers care management and 90-day supportive ambulatory care coordination to adults who visit the ED, can be discharged from the hospital safely, and meet one of the following criteria: (1) the ED visit is due to an ambulatory care sensitive condition (ACSC)², or (2) the individual meets particular utilization-based criteria (had another recent ED visit or hospitalization). Individuals are enrolled when they present in the ED while a care manager is on duty at one of the following six facilities: Bellevue Hospital Center, Elmhurst Hospital Center, Jacobi Medical Center, Kings County Hospital Center, Lincoln Medical Center, and Queens Hospital Center.

¹ "New York City Health and Hospitals Corporation: A Component Unit of the City of New York, Financial Statements June 30, 2013 and 2015." Accessed December 21, 2015. See <http://www.nyc.gov/html/hhc/downloads/pdf/board-packets/2014/hhc-financial-statement-fy14-13.pdf>.

² The diagnoses include diabetes, congestive heart failure, myocardial infarction, chest pain/angina, pneumonia, asthma, chronic obstructive pulmonary disease, urinary tract infection, dehydration, hypertension, cellulitis, deep vein thrombosis, syncope, sickle cell, seizure, intractable pain, and substance abuse.

New York City Health and Hospitals' theory of change/theory of action (TOC/TOA) is that interdisciplinary care management and planning (including linkages to appropriate ambulatory care) and extended care coordination that covers the transition to comprehensive ambulatory care can help ED patients with ACSCs better manage their health care and avoid unnecessary hospitalizations and repeated visits to the ED. The primary components of the program are care management and transitional care coordination.

Nurse care managers play a critical role in the enrollment process. They identify potential participants in the ED through automatic diagnosis- or utilization-based eligibility flags in electronic medical records (EMRs) or via ad hoc discussions with on-duty ED clinicians. The nurse care managers and clinicians rely on their own clinical judgment to identify which patients to approach about the program, focusing, for example, on patients whose ED visit may have been preventable. A nurse care manager then approaches the potential participant in the ED, explains the program, and obtains the person's verbal consent to enroll.

Nurse care managers also provide care management for participants during the initial, qualifying ED visit by performing a risk assessment, creating a plan for ambulatory care, and coordinating referrals to other providers. The risk assessment focuses on factors such as the participant's medical status, self-management abilities, social support system, and access to care. After documenting the assessment findings, the nurse care manager crafts a plan for ambulatory care and, if needed, provides participants with health education. The nurse care manager also links participants to other providers, if needed, such as a home care intake nurse or a pharmacist (for medication management) in the ED, specialists, or social workers. During the initial ED visit, the nurse care manager attempts to schedule a follow-up appointment with the patient's primary care physician (PCP) or with a New York City Health and Hospitals primary care clinic. The patient is then discharged, with instructions, from the ED.

The program provides transitional care coordination during a participant's 90 days of enrollment, mainly via phone calls from a nurse care manager and a community liaison worker (CLW). Within 24 to 72 hours after a participant is discharged, the nurse care manager calls the participant to see if he or she has any immediate questions and to confirm that the participant is medically stable. After this phone call, a CLW becomes the participant's point of contact for the 90 days of enrollment. The CLW's responsibilities include making phone calls to remind the participant about any upcoming PCP visit(s), following up after the scheduled PCP visit, and checking in with the participant at 30, 60, and 90 days post-enrollment. The CLW can also connect participants to other providers or resources, including the nurse care manager, the PCP, or other ambulatory care, if needed.

Interdisciplinary teams at each site staff the program and report to the central program leaders through a site lead. The teams consist of the following: five nurse care managers who cover 12 shifts per week, one CLW, a physician advisor (.5 FTE) who educates ED clinicians about the program and provides clinical leadership, a home care intake nurse (.5 FTE), and a pharmacist (.5 FTE). In addition to being the point of contact with the program's leaders, the site lead provides oversight for the program and is responsible for implementing it.

The program's extensive governance structures provide for program oversight and promote accountability and standardization across the partly independent sites. Site leads meet regularly with each other and with the central program leaders through the Operational Committee. The Executive Steering Committee oversees all other committees, monitors program staffing and outcome metrics, and directs program changes and implementation initiatives. Two workgroups—one of physician advisors and one of pharmacists—meet regularly to develop clinical protocols, which are used by all sites. Additional key program characteristics are shown in Table 1.

Table 1. New York City Health and Hospitals: ED Care Management Initiative characteristics at a glance

Program characteristic	Description
Purpose	The ED Care Management Initiative offers care management and 90-day supportive ambulatory care coordination to adult patients who visit the ED for ACSCs or who visit the ED and meet particular utilization-based criteria.
Components	<ul style="list-style-type: none"> Care management (primary) Transitional care coordination (primary)
Target population	<ul style="list-style-type: none"> Adults whose health care can be better managed in order to prevent ED visits and hospitalizations, as indicated by having an ED visit because of ACSC or meeting particular utilization-based criteria. Priority populations include dual eligibles, high-risk/high-cost populations, and underserved populations.
Theory of change/theory of action	Interdisciplinary care management and planning (including linkages to appropriate ambulatory care) and extended care coordination that covers the transition to comprehensive ambulatory care can help ED patients with ACSCs better manage their health care and avoid unnecessary hospitalizations and repeated visits to the ED.
Payment model	Under development, potential for inclusion under global risk contracts
Award amount	\$17,916,663
Launch date ^a	9/1/2014
Setting	ED with follow-up via telephone
Market area	Urban
Market location	New York City
Core outcomes	<ul style="list-style-type: none"> Reduced hospitalizations and 30-day hospital readmissions Reduced 7-day and 30-day repeat ED visits Better hemoglobin A1c control

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by New York City Health and Hospitals to the implementation and monitoring contractor that cover the first year of the cooperative agreement

(September 2014 to August 2015); and (3) data gathered during telephone discussions with the awardee (from November 4 through November 12, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials. We had discussions with the following staff:

- Three of the program's central leaders (project director, principal investigator, and data analyst)
- Three hospital-based site leads (including one from a site that began a pilot program of ED care management in 2008)
- A co-chair of the pharmacist workgroup and a co-chair of the physician advisor workgroup

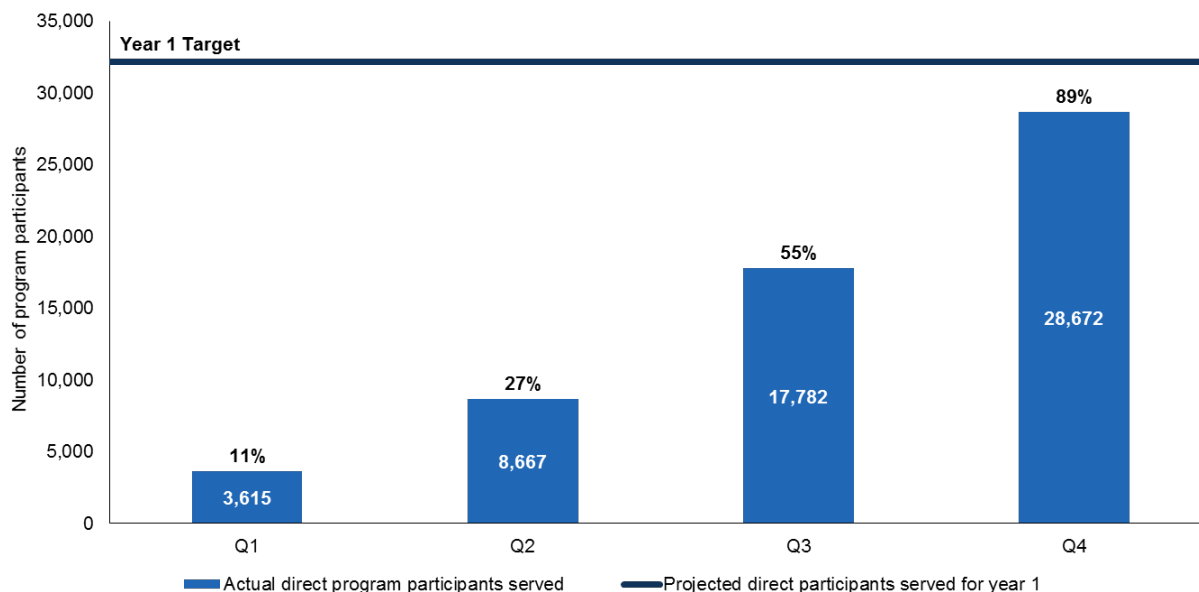
A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. Another team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts related to implementation experiences. We then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as necessary, we synthesized the material into this narrative of New York City Health and Hospitals' implementation experience.

C. Findings

1. How effectively has the program been implemented?

New York City Health and Hospitals initially faced several challenges related to rolling out the ED Care Management Initiative, including difficulties filling key staff positions and low enrollment. Program leaders indicated that New York City Health and Hospitals' bureaucratic hiring process and competitive job market were key barriers to fully staffing the program. In turn, the staffing delay led to lower-than-expected enrollment and inhibited the central leaders' capacity (for example, by limiting data analysis capabilities). In March 2015, CMMI requested that New York City Health and Hospitals develop a plan for addressing the slow implementation and low enrollment, and to obtain technical assistance from the implementation and monitoring contractor. CMMI followed up with a site visit to New York City Health and Hospitals in June 2015 and gave the awardee additional feedback (such as a recommendation to better standardize processes across sites). Since then, New York City Health and Hospitals completed hiring site-based staff toward the end of Year 1 of the program. The awardee has also increased enrollment and improved standardization across sites. The projected participants served for Year 1 and direct cumulative participants served by quarter are displayed in Figure 1.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. New York City Health and Hospitals does not have indirect program participants.

Now that the program is fully staffed at all sites, New York City Health and Hospitals is focusing on standardizing processes across the sites. Factors such as hiring delays and

insufficient cross-site coordination have led to cross-site differences in program processes. Based on its own internal monitoring and CMMI's feedback, New York City Health and Hospitals has identified several program elements and processes that can be standardized, including care protocols, the procedures for identifying potential

"The clinical judgment piece of it is a work in progress in terms of how to actually build in some training and uniform practices around that."

— Program leader

participants, the criteria and processes for referrals to other providers, and the scripts for CLW follow-up calls. Program leaders have created workgroups of physician advisors and pharmacists who will standardize care protocols, but procedures for identifying potential participants seem to continue to vary somewhat, especially because clinical judgment plays a role in determining which patients with ACSC should be approached about the program. One site lead reported that the nurse care managers assess almost all patients who meet diagnosis and utilization criteria and then determine who should be enrolled based on available resources. At other sites, nurse care managers prioritize patients whom they think will benefit the most from the program and then approach only these individuals.

Nurse care managers and many other staff in at least some sites receive minimal program onboarding training, although the central leaders have developed some training materials, and the training for CLWs was well received. Program leaders have indicated that they plan to conduct more training for nurse care managers. In addition, the CLWs completed a 35-hour community health worker training in August. Central and site-level leaders reported that CLWs were highly satisfied with the training, indicating that the CLWs viewed the training as very helpful in developing skills and confidence in their role.

It has been challenging for New York City Health and Hospitals to follow through with early plans to use care management to safely divert participants from hospitalization immediately after the qualifying ED visit. Some interviewees noted that setting up the necessary outpatient resources as a reliable alternative to hospitalization can be very difficult, given that the timeframe to do so during the ED visit is short. Although the interviewees acknowledged that the program might prevent some hospitalizations when an ED clinician is “on the fence” about admission, they hypothesized that the program would mainly affect subsequent use of the ED and other services. Some staff have therefore slightly refined the target population (among those meeting diagnosis- and utilization-based eligibility criteria), enrolling only individuals who can be safely discharged from the ED regardless of whether they participate in the program.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges?

The two components of the ED Care Management Initiative—care management and transitional care coordination—are closely linked. Although we are distinguishing between these components for evaluation purposes, the program staff see them as a unit. As a result, the key program facilitators and barriers that we discuss below apply to both components.

Even with a fully staffed program, some staff feel that the burden of their responsibilities is a challenge. In particular, interviewees expressed concern that additional staff may be required for follow-up telephone calls with participants and that burdensome documentation and data systems detract from time available to spend with patients, as described below.

- **Given the monthly enrollment targets and the number of follow-up calls per participant, one CLW per site may not be sufficient.** To free up the CLW for other tasks, one site-based interviewee sought out other staff or a volunteer to help with some of the “basic” calls, such as appointment reminders. New York City Health and Hospitals is considering hiring additional CLWs for each site.
- **Many interviewees indicated that program documentation procedures are burdensome.** Care management staff must enter data about participants into both the EMR (for clinical information) and a New York City Health and Hospitals–developed care management database (to track enrollment and interventions), which some report as not being user-friendly. The fact that the data sometimes comes from paper forms contributes to

the burden. In addition, care management information may not be viewable by all New York City Health and Hospitals providers involved in a participant's care (including the PCP). Data collection procedures have also varied between sites, and some sites have had missing data. However, during Year 2 of the program and based mainly on factors external to the program, New York City Health and Hospitals plans to begin implementing a new EMR (Epic) and care management software (GSI). The latter will include an electronic patient assessment and will allow staff in multiple New York City Health and Hospitals settings (including primary care clinics) to access care plans. Program staff anticipate that the new systems will reduce staff burden, promote standardization, increase access to clinical data, and facilitate program monitoring.

Participants are generally receptive to the program when they first have contact with a nurse care manager, although ongoing engagement is a challenge. Despite the high enrollment rate, many participants can be difficult to reach by phone because, for example, some participants have incorrect phone numbers on record. And in some cases, it has been necessary to call participants more than once before they are reached. Interviewees also said that participants often skip their PCP appointments. Due to documentation challenges, it has been difficult for New York City Health and Hospitals to track the participants' encounters throughout the enrollment period, which limits its ability to quantify attrition.

Access to PCPs is a key challenge in care coordination, and New York City Health and Hospitals is working to improve access in its primary care clinics. Several sites reported that obtaining timely PCP appointments for participants is a challenge. But these staff also reported that New York City Health and Hospitals is taking steps to improve access in its primary care clinics and that care management staff have collaborated with PCP clinics on improving the appointment-scheduling process. In addition to the access issue, data and communication limitations may interfere with the seamless transition of care from the ED to ambulatory care. Staff noted that they do not have access to data on participants' visits to non-New York City Health and Hospitals PCPs (a minority of participants visit New York City Health and Hospitals PCPs while they are enrolled), and communication with PCPs about participants' care plans or about the results of other ambulatory care referrals is limited.

The awardee uses physician advisors to educate ED clinicians and program leaders about the program, to facilitate referrals from clinicians to the program, and to convey to staff that the program is a priority. Site-based leaders indicated that physician advisors have facilitated program implementation by engaging their fellow providers and in providing clinical leadership. They have presented at grand rounds and educated peers about the program, which was noted as especially useful because there is a large number and rotating group of ED clinicians (such as resident physicians) who interact with the program. In addition, previous care management pilots at the sites also sensitized the staff to the benefits and structure of care management. Finally, some interviewees discussed the utility of New York City Health and Hospitals' Lean management processes (for example, in the form of initial planning meetings to determine goals for the program) in enlisting the senior leaders' support for the program when it was first rolled out.

Site-based leaders emphasized that ease of communication between ED clinicians and nurse care managers has facilitated program implementation. Providers and nurse care

“They [care managers] are very proactive. . . . They had already made personal connections with the nurses in each area and with the residents, and they were findable within the emergency department.”

— *Site-based leader*

managers, who cover a variety of shifts, communicate using methods such as group huddles and notes left in EMRs. Although different sites and team members have customized their communication processes to their style of working, some interviewees are satisfied with the ability of the shifting teams to collaborate in order to address participants’ needs.

3. How do the awardee and the implementing sites make decisions about program-related changes?

Both central staff and site-level leaders play an integral role in making decisions about program-related changes; the central leadership team has grown in capacity during the program’s first year, facilitating standardization between sites. The hiring of a data analyst, a financial analyst, and a project manager near the end of Year 1 has expanded New York City Health and Hospitals’ capacity for centralized analysis and leadership activities. The project director has worked with site leads and staff individually and via the Operational Committee. However, the new project manager in particular will both improve the central leaders’ ability to disseminate standardized protocols and assist sites in implementation. As discussed, the physician advisor workgroup and the pharmacist workgroup (which create some policies and procedures) include representation from each site and central leaders. At the site level, the leads oversee implementation, although they are not paid with program funds, and they balance their program leadership role with other duties. Some sites indicated that the lines between the leadership roles of the site leads and the physician advisors were not always clear, so these sites had to clarify the roles during implementation.

New York City Health and Hospitals has used data and various self-monitoring mechanisms to inform its implementation, and it continues to enhance its self-monitoring capabilities. Data entry is an ongoing challenge for sites, and data analysis was a challenge before the full-time central data analyst was hired. The new data analyst and the financial analyst, who have recently been given access to some claims data, will provide further analytic support for the program in general and for sites in particular. Program leaders have used internal data and feedback from site-based staff to inform the following strategies and changes: identify the need to have standardized care pathways for diagnoses that are frequent among participants, identify the need for additional CLWs, and identify geographic areas in which PCP access issues are most challenging. However, New York City Health and Hospitals’ ability to track process measures (such as completion of follow-up calls) is limited, which presents a challenge to monitoring implementation.

CMMI's feedback highlighted areas for improvement in implementation, and New York City Health and Hospitals staff have been actively working to implement changes. As mentioned, New York City Health and Hospitals has focused on standardizing the program across sites and on fostering communication between sites. The awardee has also filled all of the program's open positions. Although program leaders were already aware of, and had started to address, some of the challenges identified by CMMI, the agency's feedback prompted the leaders to focus on particular components, such as developing an electronic patient assessment. One interviewee emphasized that implementing a program as complex as the ED Care Management Initiative is a learning process and that awardees must have room to grow through their challenges with supportive feedback from CMMI.

4. To what extent have the awardee and the implementing sites begun to plan for or implement payment reforms?

New York City Health and Hospitals is in the early stages of developing its payment model and intends to build on its existing contracts with payers, which include incentives for quality and cost savings (such as global risk contracts with some Medicaid and Medicare managed care partners). Although the program may help New York City Health and Hospitals meet quality and utilization goals for these existing contracts, the awardee reported that it has not yet modified these existing contracts to cover program services.

D. Impact evaluability assessment

After reviewing information from program documents and interviews with program staff, we conclude that a rigorous impact analysis is feasible. For claims-based measures, we will use differences-in-differences regressions to compare trends in outcomes before (pre-period) and after (post-period) the HCIA-funded program was launched for patients attributed to the six participating New York City Health and Hospitals EDs and those attributed to comparison EDs. The comparison EDs are the five New York City Health and Hospitals EDs that are not participating in the program plus the ED at Montefiore Medical Center. Difference-in-differences models net out any pre-existing differences between treatment and comparison EDs at baseline that are not accounted for by propensity score matching—provided that these differences would not have changed over time in the absence of HCIA funds. Hence, the combination of the difference-in-differences analysis and propensity score matching should help to eliminate bias associated with unobserved differences in ED characteristics that do not change over time.

E. Next steps

We look forward to continuing to work with New York City Health and Hospitals for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct an in-person site

visit with awardee leaders and program staff in the summer of 2016. We will use this site visit to discuss frontline staff experience with program implementation and follow up on key issues identified during telephone conversations with program leaders in the fall of 2015. Specifically, we will inquire about any recent changes to the program and further develop our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact evaluation include using the awardee-provided finder file to identify in claims data all Medicare and Medicaid beneficiaries who visited treatment group EDs, and we will calculate descriptive statistics for demographic characteristics and baseline health care utilization and diagnoses. We will then identify Medicare and Medicaid beneficiaries who received care in comparison group EDs and had a primary diagnosis of an ACSC, attribute these beneficiaries to the comparison group, and compare baseline characteristics of the treatment and comparison groups to determine how well they match one another. We will conduct individual-level matching to balance the observable characteristics of patients in the treatment and comparison EDs. Limiting the comparison group to a matched subsample of Medicare and Medicaid beneficiaries—closely matching observed characteristics of the treatment group—may also reduce differences between participants and nonparticipants in terms of unobserved characteristics if those characteristics are correlated with the matching variables. If the samples are large enough and if it is methodologically feasible, we will conduct exact matching with patients from the sample of comparison hospitals. If that is not possible, we will relax the matching algorithm to allow for cases in which observable characteristics match closely but not exactly.

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APPENDIX B.26

SEATTLE CHILDREN'S HOSPITAL

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REPORT

APPENDIX B.26

HCIA Round Two Evaluation: Seattle Children's Hospital

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–September 23, 2015)

Successes

- Leveraging prior expertise: Seattle Children's Hospital's earlier experience with inpatient care coordinators and hospital clinical guidelines has helped to inform program development and implementation.
- Engaging Medicaid managed care organizations (MCOs): Seattle Children's Hospital has agreements with four of the five Medicaid MCOs in the state to share data and to reach consensus on a payment model.

Challenges and strategies to address them

- Data acquisition and analysis: Seattle Children's Hospital addressed the MCOs' concerns about data sharing and hired additional staff with expertise in receiving, storing, and analyzing MCO eligibility and claims data.
- Participants are spread among a large number of primary care providers (PCPs): Beginning in June 2015 Seattle Children's Hospital engaged more intensively with providers who have more participants or who expressed an interest in the PPIC program.
- Early challenges with enrollment: Enrollment lagged in the first program year due to a time-intensive enrollment and consent process. Seattle Children's Hospital shifted to passive enrollment and exceeded year-one enrollment targets. Care teams had just begun engaging with families toward the end of the first year.

Lessons learned

- Primary care practices were eager to partner with Seattle Children's Hospital for training and educational opportunities.
- Working with Medicaid MCOs has presented significant challenges, but consistent engagement with them has resulted in Seattle Children's Hospital receiving the claims data needed for program monitoring and progress in negotiating a shared payment model.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on September 23, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39

awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Pediatric Partners in Care (PPIC) program, which is being implemented by Seattle Children's Hospital. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Seattle Children's Hospital's PPIC program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to Seattle Children's Hospital, and a review of Seattle Children's Hospital's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Seattle Children's Hospital's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of Seattle Children's Hospital's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

Seattle Children's Hospital's PPIC program aims to (1) improve the health outcomes of children with disabilities who are covered by Supplemental Security Income (SSI) and Medicaid; (2) reduce medical costs for these children by eliminating unnecessary, redundant, and ineffective treatments; and (3) develop a scalable, outpatient care management model that supports and optimizes the existing care delivery infrastructure. In response to feedback from primary care providers (PCPs) for children being enrolled in the program, Seattle Children's Hospital has increased the emphasis on PCP engagement and education to help reach the goals of the program. The awardee hypothesizes that PPIC will improve a caregiver's experience with the coordination of care, enhance pediatric quality of life, and reduce the overall health care costs for targeted children.

PPIC targets approximately 3,000 children and adolescents under the age of 18 in King and Snohomish counties in Washington State who are enrolled in the SSI program and covered by Medicaid. Of these 3,000 children, PPIC staff aim to enroll approximately 1,600 who are identified as being at high risk for negative health outcomes. Risk is being determined on the basis of the following factors: a hospitalization or an emergency department (ED) visit or a Washington State Predictive Risk Intelligence System (PRISM) score greater than 1.¹ The program staff also plan to enroll any PPIC-eligible children who receive care from a PCP who is engaging with the program.

The PPIC program involves three components: (1) care management and coordination for children and their caregivers; (2) education and training to providers to help them address the specific needs of enrolled children; and (3) outreach to hospital clinical departments to identify opportunities to revise or develop clinical practice guidelines to reduce cost and increase quality.

¹ A predictor of health care utilization developed by Washington State's Medicaid agency based on the Chronic Illness and Disability Payment System for Medicaid.

Table 1. Seattle Children's Hospital: PPIC characteristics at a glance

Program characteristic	Description
Purpose	SCH's PPIC program aims to (1) improve the health outcomes of disabled children covered by SSI and Medicaid; (2) reduce medical costs for these children by eliminating unnecessary, redundant, and ineffective treatments; and (3) develop a scalable outpatient care management model that supports and optimizes the existing care delivery infrastructure.
Components	Care coordination and management (primary) Provider education and training (secondary) Evidence-based/clinical practice guidelines (secondary)
Target population	1,600 children and adolescents younger than age 18 who: <ul style="list-style-type: none"> • Live in King and Snohomish counties in Washington State • Are enrolled in the SSI program • Are covered by Medicaid • Are identified as being at high risk for negative health outcomes
Theory of change/theory of action	SCH hypothesizes that by establishing a care team and care plans, and by providing community resources the PPIC will: <ul style="list-style-type: none"> • Improve a caregiver's experience with the coordination of care • Enhance pediatric quality of life • Reduce the overall health care costs for targeted children
Payment model	Shared savings, value-based purchasing, fee-for-service
Award amount	\$5,561,620
Launch date ^a	2/1/2015
Setting	Provider-based
Market area	Urban, suburban
Market location	King and Snohomish counties
Core outcomes	<ul style="list-style-type: none"> • Improve measures of care coordination by 10 percent for the majority of participants • Improve measures of pediatric quality of life by 10 percent for half of the participants • Reduce overall cost of care by 9.7 percent by March 2017

^a After a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Seattle Children's Hospital to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), (3) data gathered during initial telephone discussions with the awardee and during our site visit to the PPIC program September 21–23, 2015. For our document review, we used a standardized tool to abstract key data from the application, first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed program leaders, frontline staff, and hospital leaders at Seattle Children's Hospital. We also conducted phone interviews with clinicians whose patients are enrolled in the intervention, the director of care coordination from a participating Medicaid managed care organization (MCO), and staff from the actuarial firm working with Seattle Children's Hospital to develop the payment model.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this report on Seattle Children's Hospital's implementation experience.

C. Findings

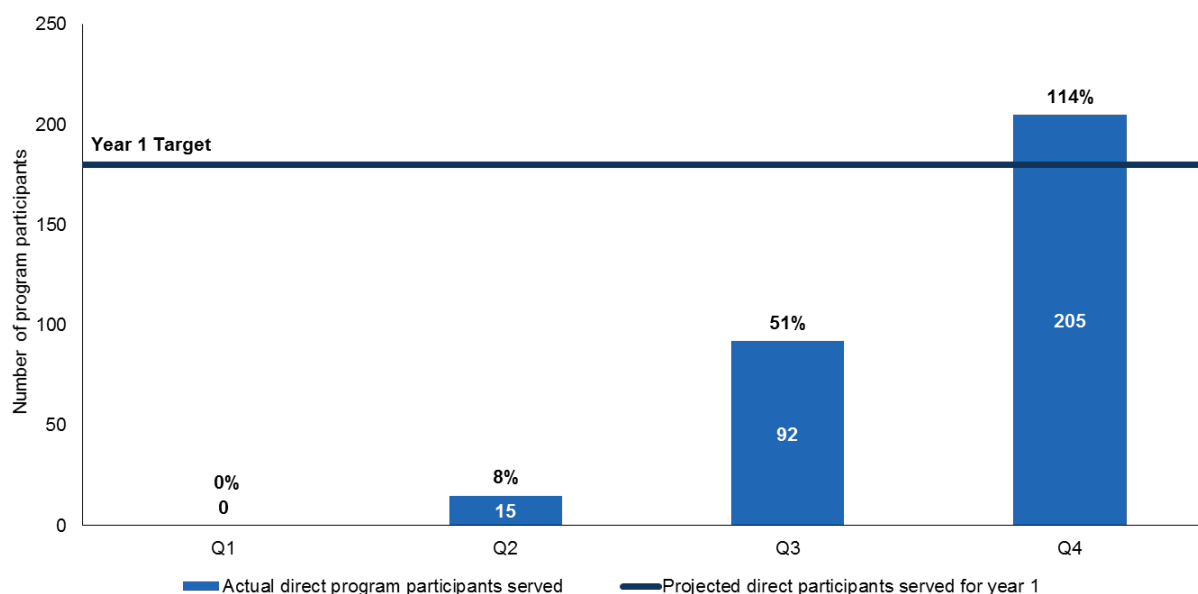
1. How effectively has the program been implemented?

Seattle Children's Hospital faced early delays in enrollment and in hiring staff, but implementation progress has been swifter recently. To improve the implementation process, staff made several changes to the original plans, as described below.

Seattle Children's Hospital reported delays related to enrollment, hiring staff, and obtaining usable payer data. Seattle Children's Hospital planned to use Medicaid MCO data to identify children for enrollment. When Seattle Children's Hospital faced delays in MCO negotiations and receipt of usable data files, it delayed both the hiring of care managers and community outreach workers and the enrolling of patients. For more than half of the first program year, Seattle Children's Hospital experienced challenges in hiring care managers who are comfortable with outpatient-based coordination rather than hospital-based coordination. Seattle Children's Hospital also reported challenges recruiting community outreach workers with the desired skill sets, including language skills and experience helping patients navigate community resources. By August 2015 (almost a year after the award date), two nurse care managers had been hired, and by September 2015, two community outreach workers had been hired. In all, Seattle Children's Hospital aims to hire 3.5 care managers and three community outreach workers and reported that they are in the process of interviewing for the remaining positions. Seattle Children's Hospital leaders also noted that receiving the HCIA funding notification immediately preceding the start date was a challenge for an organization in which several months elapse from the time a position is defined to when it is filled. They noted that a designated planning period between the award date and the launch date would have given Seattle Children's Hospital time to build the program's infrastructure without reducing the amount of time remaining to implement interventions with participants.

Although Seattle Children's Hospital exceeded its first-year target projection of direct participants served, enrollment lagged at the beginning of the first program year (Figure 1). When Seattle Children's Hospital began to enroll participants in February 2015, it identified children who could potentially participate in the program who were then contacted by care team staff to be enrolled in the program. (This was before any community outreach workers had been hired, so care managers completed the first outreach to enroll patients.) Enrollment lagged due to the time required for care managers to make contact with caregivers, enroll the child, and generate a care plan. Once community outreach workers were hired, much of this process was assigned to them so that care managers could focus on establishing and implementing the care plan. During the third quarter of the program, the enrollment process was revised to a more passive approach. Seattle Children's Hospital now uses claims data to identify children eligible to participate in PPIC and sends a letter to the child's caregiver welcoming them into the program. Children are considered enrolled if the caregiver does not opt out, regardless of whether the child has yet been engaged in the care planning process. As a result, the program enrolled a total of 390 children by the end of fourth quarter of the award, 205 of which were reported as direct participants by SCH, exceeding the awardee's goal of 180 direct participants by the end of the first program year.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. Seattle Children's Hospital does not have indirect program participants.

Seattle Children's Hospital is making progress toward the implementation goals stated in its operational plan despite having made some significant changes to program design.

Advancement toward most key goals is evident, but considerable work lies ahead:

- **Developing and implementing standard tools for care coordination.** By February 2016, the awardee aims to provide direct care coordination for at least 60 percent of participants who were ever-enrolled by that date. As of August 2015, SCH reported it had provided care coordination in the form of a completed plan for 42 percent of enrollees.²
 - **Engaging and supporting primary care practices.** Engaging primary care practices was initially a minor focus in the operational plan, but PPIC leaders reported that these practices have been eager to “actively participate in system improvements such as inpatient discharge communication and handoff, challenging medication regimens, and marketing of urgent care options.” As a result, beginning in the fourth quarter of the cooperative agreement (June to August 2015), program staff began to spend more time identifying the strengths and needs among community practices that provide care to participants. Seattle Children's Hospital set a goal of engaging with 20 primary care practices by February 2016 and had done so with 8 practices as of August 2015.
 - **Developing hospital clinical practice guidelines to reduce costs and improve care.** PPIC leaders described how early analysis of participant claims data showed hospital care as a key driver of costs. As result, program leaders began to engage with hospital clinical departments to identify opportunities to reduce costs and improve care for the participant population. The PPIC team has met with two departments with the most costly participant populations (hematology/oncology and cardiology) to create a list of potential interventions and has scheduled meetings with three additional departments. Seattle Children's Hospital aims to determine targets for changes in hospital-based care and design the interventions by the end of 2015.
2. **What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?**

The PPIC program involves three program components: (1) care coordination and case management for children and their caregivers, (2) education and training to providers to help them address the specific needs of enrolled children, and (3) outreach to hospital clinical departments to identify opportunities to revise or develop clinical practice guidelines to reduce cost and increase quality. Below we discuss each component and the major facilitators and barriers to implementing each component.

² We will investigate with the awardee during our next round of interviews the difference between the number of patients reported as receiving care coordination services versus those reported as receiving a care plan.

a. Primary component: care coordination and case management

As of the end of the program's first year, Seattle Children's Hospital was continuing to develop care teams to complete an initial assessment of participant and caregivers' needs; identify barriers to and gaps in care; and work with the caregivers, clinicians, and other support services to address these needs. Each care team includes a nurse care manager and a noncredentialed community outreach worker. In collaboration with the caregivers, the PCP, and

"So my kids who are seeing 9 and 10 specialists, it's very challenging to keep up on their care and what's going on, and to effectively communicate with everyone, and that's what I was really hoping this may improve, so that the patient ends up getting better care."

— *Participating PCP*

specialists, the care team builds a care plan, circulates it to caregivers and providers, and reviews it on an as-needed basis whenever the child has an ED visit, hospitalization, or other significant change in the need for care. The care team expects to work intensely with families for one to two months and then follow up with families only on an as-needed basis. Seattle

Children's Hospital is still working to identify additional support roles for the care team, and is considering hiring a pharmacist or pharmacy technician to support all of the nurse care managers and community outreach workers. The Seattle Children's Hospital leadership team is also still exploring whether and how to integrate behavioral health assessments and interventions into the program.

Seattle Children's Hospital's experience with care coordination and the state health information exchange have been major facilitators for implementing this component. The organization has historically focused on inpatient care coordination but recognizes the need for PPIC to bridge the inpatient setting to ambulatory and community settings. Seattle Children's Hospital has an existing inpatient team of clinical and non-nursing staff who support the inpatient management of patients and transition planning. The new PPIC care team staff are located in the same building as existing PPIC inpatient care coordinators to facilitate communication. Seattle Children's Hospital also uses an existing state health information exchange that identifies ED and hospital discharges in real time but does not track outpatient care. The care team can use the Seattle Children's Hospital EMR to track patients' outpatient appointments and care across multiple specialists in the system.

The main challenge to implementing care coordination and case management has been the diverse needs of participants. Seattle Children's Hospital recognizes that participants' needs are not always medical. They can be related to language, transportation, or other social determinants of health. Participants have needed care plans to be translated into Spanish, easier access to interpreter services, and adequate food in the home. Every family is so different from other families that the care team cannot create a "one-size-fits-all" intervention. It has to assemble resources unique to each participant and caregiver, including referrals, interpreters, and community supports.

To address the diversity of participant needs, Seattle Children's Hospital has intentionally hired care team members who are not only experienced with care coordination, but who are also

are flexible in approaching their role. For instance, Seattle Children's Hospital sought individuals who felt comfortable with defining and redefining their roles through trial and error and adapting to the diverse needs of participants and community practices. For example, the care team has already updated the patient needs assessment tool several times to better capture the needs of the child and family. The care team is also creating a resource manual to link families with various organizations and community supports to address their diverse needs and geographic locations.

Data and information technology (IT) infrastructure issues have made implementing care coordination challenging. Seattle Children's Hospital has not used claims data to guide clinical care; nor did it have enough internal staff to work with claims data. Another issue involves the absence of a care coordination documentation system built into its internal EMR to record care plans. In addition, Seattle Children's Hospital lacks a care coordination tool that could be accessed in multiple settings in the community, such as a tool that community PCPs could use to update the care plan.

To address these challenges, Seattle Children's Hospital has added staff and expanded its IT infrastructure. It has hired a data analyst with extensive experience with claims data, and it has engaged a researcher from another department who has expertise with claims data. At the time of the site visit, the organization was in the process of purchasing a new, cloud-based, care coordination and clinical quality reporting EMR module, which will combine multiple sources of claims data, identify high-risk patients, and facilitate documentation and reporting. PPIC staff created work-arounds for the lack of tools in the EMR, including an online contact log; the staff also created care plans in word processing software and then uploaded these plans manually into the EMR.

b. Secondary component: provider education and training

Seattle Children's Hospital has shifted resources to focus more on provider education and training. This activity was originally intended to be a secondary component of the program, but Seattle Children's Hospital found that primary care practices were eager to participate in system improvements and training opportunities. PPIC nurse care managers are identifying opportunities for education within collaborating primary care offices. When the care team staff enroll new participants and develop corresponding care plans, they also identify the specific training and support that participating practices will need to address the needs of the child and caregivers. Practices vary in their needs—including staff, supplies, and pediatric training—and the program leaders plan to adjust the training and support they will provide to the practice based on the practices' needs and resources. For example, pediatric clinics that are well staffed with care coordinators might not need care coordination support, but they might look for specific training on new diabetic pumps.

"So, if we have a practice that has a lot of these kids, we're going to that practice and saying, 'Let's work with you as a practice. What do you need in your whole environment to help support these kids?'"

— PPIC administrator

The strong interest from many PCPs in the community has been an unexpected facilitator for this component. As Seattle Children's Hospital began implementing the PPIC program, it learned that many PCPs were interested in becoming involved in the intervention. Program leaders reported that after they gave presentations on PPIC to pediatricians, the pediatricians felt that their peers and administrators would also be interested in the program. Seattle Children's Hospital executives have also met with chief executive officers (CEOs) of PCP organizations.

A challenge to implementing provider education and training has been the historical relationship between Seattle Children's Hospital and the primary care community. Seattle Children's Hospital does not own any primary care practices and was unsure about the degree to which it could engage these practices. Some stakeholders felt Seattle Children's Hospital has a reputation for taking over the care of children with complex needs without engaging PCPs in planning or decision making. The large number of practices across the two counties targeted by the program may also become a challenge, as each practice typically cares for only a limited number of targeted children. The care team—even with a limited staff—will have to identify and engage many practices simultaneously.

To engage PCPs, the Seattle Children's Hospital team is drafting tool kits and education opportunities based on gaps identified in discussions with practices. For example, the team has discussed a gastrostomy feeding tube (g-tube) tool kit, which will include materials to educate both providers and families. It will also include sample g-tubes and supplies, and Seattle Children's Hospital will send an experienced nurse to do hands-on education at the practice.

Practices vary in the resources they have to care for children with complex needs, including staff, supplies, and level of pediatric training that providers and staff have. Some primary care offices have dedicated care coordination staff but limited pediatric training or supplies, particularly practices that have primarily or exclusively family physicians. Other offices have pediatric expertise but not dedicated care coordination staff.

To address this challenge, interventions will be tailored to the needs of each practice. For practices with minimal resources, the care team will focus on providing “just-in-time” training to support a child's immediate needs because the practice might not have enough staff time to devote to training. Practices with existing care coordinators may receive targeted training based on identified gaps.

c. Secondary component: evidence-based/clinical practice guidelines

Program leaders now believe that improving care coordination is only one of several pathways for reducing costs of care for PPIC enrollees. Another promising opportunity involves wider use of clinical practice guidelines. For example, Seattle Children's Hospital staff noted that many hospitalized children receive medications intravenously when oral medications would be appropriate and less expensive. As a result, PPIC staff have begun to engage hematology/oncology, cardiology, and neonatology departments (which have a large number of PPIC children) in discussions of clinical guidelines as a strategy for reducing in-hospital costs of

care. This activity—which was not included in the original PPIC plan—emerged from the PPIC staff's recognition that hospital care was one of the primary cost drivers for children with complex conditions.

Seattle Children's Hospital's experience in the development of hospital clinical guidelines has greatly facilitated the implementation of new hospital clinical practice guidelines. Before PPIC was launched, a Seattle Children's Hospital team developed about 50 clinical standard pathways that cover about 50 percent of hospitalizations. The pathways include key recommendations, time, outcomes, and goals which are reviewed and adjusted quarterly. PPIC will accelerate this work to include new patient populations and additional hospital departments.

The willingness of hospital clinical departments to engage in discussions around the cost of care has facilitated the implementation of these clinical guidelines. Seattle Children's Hospital leaders reported that this was the first time they discussed cost implications with some of the hospital departments mentioned above. Providers were receptive to analyzing treatment options and reviewing possible interventions—both within the grant and overall as a hospital—to improve care coordination, prevent readmissions, and reduce hospital length of stay.

d. Implementation changes anticipated in the coming months

By the end of 2015, Seattle Children's Hospital plans to finalize its PPIC staffing model and strategies to engage with practices and clinical hospital departments. Seattle Children's Hospital may not hire 10 care managers, as originally stated in its proposal, and instead is investigating other staffing options such as a call center or pharmacy staff. Seattle Children's Hospital developed these options based on target areas they will identify as significant utilization or cost drivers for the target population. Seattle Children's Hospital also aims to have more specific strategies and interventions in place to engage with practices and will be developing three trainings by the end of 2015. Regarding the clinical guidelines component, Seattle Children's Hospital aims to determine intervention targets and design interventions by the end of the year.

3. How does the awardee make decisions about program-related changes?

Seattle Children's Hospital has a defined formal self-monitoring process but is still waiting for sufficient data on which to base decisions. In its fourth quarterly report (which contained data through August 31, 2015), Seattle Children's Hospital noted that it has completed the data collection and reporting for 80 percent of its self-monitoring metrics. Because Seattle Children's Hospital faced delays in obtaining reliable claims data, it has been using Seattle Children's Hospital utilization data as a proxy. Within the hospital guidelines development team, Seattle Children's Hospital has experience applying outcome and process measures to specific populations and will rely on this expertise to identify a more formal self-monitoring process after it receives claims data. In the fifth quarter, Seattle Children's Hospital also plans to complete a survey of the work experience of PCPs and specialists, and their engagement with the program. The awardee will use the results of the analysis of data from this survey to guide program changes. In addition, Seattle Children's Hospital plans to refine the program, if needed, based on

an analysis of data from a caregiver survey on family experiences with care. The team is capturing participant survey data systematically at enrollment (baseline) and then every six months for each child; more than 90 families have completed the Family Experience with Care Coordination Survey at baseline. The first six-month survey was fielded in early September. At that point, the team can begin to trend results.

Although it is still early in the implementation process for formal feedback loops to result in changes to the program, feedback from practices has already caused Seattle Children's Hospital to increase the program's emphasis to engaging PCPs. The clinical guideline component was also added as a result of the awardee's examination of hospital cost data and its assumption that improving care coordination alone is not enough to achieve desired outcomes.

MCOs have also influenced the implementation of PPIC. Seattle Children's Hospital has engaged MCOs in the implementation through monthly webinars. The webinars are held with each MCO to discuss clinical progress with the program, including reviewing children from the MCO who have been enrolled in PPIC, discussing characteristics and utilization for the group, and detailing interventions that are being implemented.

4. To what extent has the awardee begun to plan for or implement payment reforms?

As part of its HCIA R2 proposal process and implementation, Seattle Children's Hospital worked with the state's five Medicaid MCOs. Initial contacts were predicated on the MCOs' willingness to share claims data and engage in discussions about a potential payment model. Seattle Children's Hospital reached agreements with four of the five MCOs in the state. These four MCOs cover approximately 80 percent of the children enrolled in SSI in the two target counties.

To maintain engagement with the MCOs, the Seattle Children's Hospital team holds monthly webinars with each one separately to discuss clinical progress with the program, including reviewing children from the MCO who have been enrolled in PPIC, discussing characteristics and utilization for the group, and detailing interventions that are being implemented. Seattle Children's Hospital leaders noted that the MCOs vary in terms of who attended the meetings, ranging from a single project manager to a team that includes the MCO's care coordinator, a social worker, and a medical director.

In addition, Seattle Children's Hospital brought together the CEOs of all four MCOs for a meeting to reach consensus on a framework for a payment model. This meeting was facilitated by staff from an actuarial firm with whom Seattle Children's Hospital contracted to help develop a proposed payment model. The meeting concluded with agreement on a single payment model framework. The framework includes a weighted set of targets for shared cost savings; reductions in utilization measures, such as hospitalizations and ED visits; and intervention process measures with some minimum quality measure standards. At the time of the site visit, the actuarial firm's goal was to have a detailed payment model approved by Seattle Children's Hospital and ready to present to the MCOs by mid-October 2015.

Seattle Children's Hospital's leadership described existing relationships with MCOs as both a challenge and a facilitator to implementing payment reform. Historically, Seattle Children's Hospital and the MCOs have had a largely adversarial relationship when it came to contract negotiations, reimbursement levels, and denials of coverage. However, Seattle Children's Hospital leaders also noted that there is "mission fit" between the hospital and the MCOs in that all seek to serve the needs of populations regardless of their ability to pay. Seattle Children's Hospital observed that recent discussions have had a more cooperative tone.

Seattle Children's Hospital described working with an actuarial firm with a range of relevant expertise as a facilitator. This expertise includes experience with performance measurement for care management initiatives, work with Medicaid managed care, and familiarity with child populations.

Seattle Children's Hospital's team and staff from the actuarial firm described at least three other key challenges in developing the payment model: (1) obtaining data, (2) having sufficient reliable data, and (3) creating a payment model around an evolving model of care. First, Seattle Children's Hospital had to negotiate with each MCO to receive claims data directly and for the MCO to supply to the actuarial firm claims plus cost data. The MCOs were reluctant to share cost data with the first actuarial firm Seattle Children's Hospital contracted with because that firm also had a relationship with the Washington Medicaid agency, which could have been a conflict of interest. When the MCOs were unwilling to share their cost data with this firm, Seattle Children's Hospital contracted with a different firm. Four of the MCOs were willing to work with this firm and have signed confidentiality agreements in place. Seattle Children's Hospital ultimately stopped negotiating with the fifth MCO because of its unwillingness to share data.

Second, Seattle Children's Hospital and the actuarial firm have faced significant challenges related to the Medicaid data that they have been able to obtain. The state Medicaid agency was unwilling to supply historical claims data, and the SSI population had been enrolled in managed care for only a maximum of 18 months, depending on location. As a result, baseline data are limited for measures in a population expected to have "volatile" cost and utilization patterns. There were also challenges associated with obtaining MCO data that met the actuarial firm's quality and completeness standards. Seattle Children's Hospital adapted to this situation by hiring a data analyst with extensive experience using claims in payer and provider settings. In addition, the actuarial firm has worked directly with data and IT staff at each MCO to obtain appropriate data.

Third, Seattle Children's Hospital and the actuarial firm are attempting to negotiate a payment model around a model of care that is still evolving. Data on the program's impacts are limited, so it is challenging for Seattle Children's Hospital and the actuarial firm to set targets for cost and utilization reductions and to establish a final set of process measures for the intervention (for example, determining when a care plan should be considered complete). Both have addressed this problem by frequently updating the MCOs' teams on the progress of the clinical interventions and the payment model.

D. Impact evaluability assessment

After reviewing information gathered from program documents and interviews with program staff, we conclude that a rigorous impact analysis is feasible. The best approach is a difference-in-differences design that allows us to compare children in the treatment group to children in a matched comparison group. The eligibility criteria for the comparison group will be the same as the criteria for the treatment group—with two key differences. Like the treatment group, the comparison group will include children enrolled in Medicaid managed care in Washington State who also receive SSI. However, the treatment group includes children from King and Snohomish counties only, whereas children in the comparison group will be drawn from other counties in Washington State. Furthermore, Seattle Children's Hospital uses PRISM risk scores to determine eligibility for PPIC. PRISM scores are not included in the Medicaid claims data we will use for the impact evaluation. As a result, we will collect PRISM scores from Seattle Children's Hospital for the treatment group but will not have PRISM scores for the comparison group. Because PRISM scores are based on the publicly available Chronic Illness and Disability Payment Systems (CDPS) risk adjustment methodology, we plan to use CDPS scores to mirror PRISM scores and match children in the treatment group to comparison children.

E. Next steps

We look forward to continuing to work with Seattle Children's Hospital for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

After we obtain data on the treatment and comparison groups, we will use propensity score matching to match individuals in the treatment group to individuals in the comparison group. We will ensure that this matching process result in both groups having similar baseline characteristics. Once we have matched the treatment group to a comparison group, we will create outcome and explanatory variables and, depending on data availability, produce initial impact estimates for the first one to two quarters of PPIC operations.

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APPENDIX B.27

THE UNIVERSITY OF KANSAS HOSPITAL AUTHORITY

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REPORT

APPENDIX B.27

HCIA Round Two Evaluation: The University of Kansas Hospital Authority

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 29, 2015)

Successes

- All 11 participating critical access hospitals (CAHs) implemented heart attack and stroke care protocols, achieved Emergent Stroke Ready designation, and implemented American Heart Association–recommended practices for ST-elevation myocardial infarction (STEMI).
- The awardee began providing transitional care management and chronic care management services to patients recently hospitalized for heart attack or stroke, or referred through primary care.
- The awardee developed self-monitoring performance feedback systems for acute care performance monitoring, which have resulted in clinical care improvements through adherence to the protocols.
- The awardee implemented the Avera eCare system (an on-demand telemedicine service), which has been well received by CAH staff and has proven beneficial to emergency care.
- The awardee entered into discussion with two other regions in Kansas about the possibility of joining the Kansas Heart and Stroke Collaborative and implementing the program in their regions.

Challenges and strategies to address them

- There is a limited pool of information technology (IT) and clinical staff in rural areas, making it challenging to hire local IT staff, transitional care managers, and health coaches. The awardee worked closely with local partners to identify and recruit qualified local candidates and conducted extensive interviewing.
- The Collaborative faced a long delay in obtaining Medicare claims data needed to develop the payment model and to risk-stratify patients for chronic care management services. The Collaborative and its analytics contractor used historical claims data from HaysMed to begin payment modeling while waiting for the Medicare claims data.
- Extracting data for performance monitoring and for transitional and chronic care management from different electronic medical records (EMRs) proved more difficult, expensive, and time-consuming than expected. More resources were devoted to the effort, manual and electronic data extraction methods are now being used, and the Collaborative's staff are working closely with participating providers to learn how to get key information from their EMRs and other IT systems.

Lessons learned

- Evidence-based stroke and heart attack protocols, with individualized support to accommodate rural circumstances, can result in improved patient outcomes by shortening the critical times between arrival at the hospital, testing, diagnosis, and effective treatment.
- Rural primary care providers are receptive to transitional care and chronic care management services because they recognize that these services address issues that they are unable to, are important to successful recovery from stroke and heart attack and managing and improving chronic conditions, and avoiding hospital readmissions.
- Maintaining consistent communication, collaboration, and teamwork among awardee staff and partners contributes to successful operationalizing and refining of the program.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 29, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children’s Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee’s early implementation experiences
3. Assess the facilitators of and barriers to each awardee’s success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Kansas Heart and Stroke Collaborative, which is being implemented by the University of Kansas Hospital Authority. In this document (referred to as a “narrative”), we examine this program’s first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the University of Kansas’s program—the Kansas Heart and Stroke Collaborative—including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee’s application; initial telephone discussions with the awardee on May 22, 2015; key informant interviews conducted during a recent site visit to the University of Kansas from October 27 to 29, 2015; and a review of the awardee’s reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the University of Kansas’s program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the University of Kansas's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The University of Kansas received an HCIA R2 cooperative agreement to bring together 14 rural communities in northwest Kansas to improve outcomes for heart disease and stroke while reducing the cost of care. The program encompasses both the convening of the participating communities and the development and implementation of clinical protocols, care management, and health coaching.

As part of its HCIA R2 project, the awardee convened the Kansas Heart and Stroke Collaborative, a clinically integrated network of provider organizations. Collaborative partners include (1) the University of Kansas Medical Center (KU, the state's academic medical center) in Kansas City, Kansas; (2) the University of Kansas Schools of Medicine, Nursing, and Health Professions, also based in Kansas City; (3) the Hays Medical Center (HaysMed) in Hays, Kansas, a rural tertiary care hospital; (4) 11 critical access hospitals (CAHs) in northwest Kansas; (5) multiple rural primary care providers in the 14 communities; (6) multiple local emergency medical services (EMS); and (7) First Care Clinic, a federally qualified health center (FQHC), also in Hays. The partners participate in the Collaborative's four standing committees for (1) clinical issues, (2) technology, (3) education and outreach, and (4) finance and administration. Collaborative staff, headquartered in Hays, include an executive director, an operations director, a training manager and Hays site manager, 2 transitional care managers, 10 health coaches (4 more were expected to be hired by December 2015), heart attack and stroke program managers, information technology (IT) support staff, and an office manager.

This program incorporates the theory of change or theory of action (TOC/TOA) in which the awardee hypothesizes that evidence-based heart and stroke care protocols that are reinforced with provider education and telemedicine, along with transitional and chronic care management and patient and family engagement, will (1) produce measureable improvements in rural Kansans' heart health and post-stroke survival and (2) drive significant reductions in total cost of care related to heart disease and stroke. The payment models will (1) incentivize collaboration among rural providers and (2) ensure continued access to care in rural communities. The program's care delivery model and program components address unique health care challenges faced by rural providers.

The following are the key program goals:

- By September 31, 2014, form and operationalize a non-equity alliance of health care providers to design and manage the continuum of care for residents of specified counties in northwest Kansas who are at risk of or who suffer from cardiovascular disease or stroke.
- By March 31, 2017, residents of specified counties in northwest Kansas who are at risk of or who suffer from cardiovascular disease or stroke will have optimal access to prevention and screening, acute care, post-episode care, and disease management.

The Collaborative's work is complex. It is divided into three phases, each of which has its own components. The three distinct phases are (1) the acute care phase (which has already been implemented), (2) the transitional care and chronic care management phase (currently in process), and (3) the population health phase (to be implemented in late 2015 and early 2016). These phases include several components, as described below:

- The first phase, or acute care phase of the program, focuses on developing regional systems for stroke and ST-elevation myocardial infarction (STEMI, a serious type of myocardial infarction or heart attack). The 11 participating CAHs, HaysMed, and KU have implemented standardized acute care protocols (see examples in Section F) to ensure that people presenting at the hospital with heart attack and stroke symptoms receive evidence-based, appropriate treatment in a timely manner, preventing further morbidity and mortality and improving outcomes. In addition, telemedicine helps clinicians at CAHs (implementation is ongoing) treat heart attack and stroke by linking them with remote emergency or critical care specialists through Avera's eCare¹ tele-health solution.
- The second phase, coordinated through HaysMed, provides transitional care and chronic care management services for people who have suffered from or who are at high risk of a heart attack or stroke. The transitional care managers identify and enroll patients who are eligible for transitional care management (TCM). During the 30-day TCM period, the transitional care managers complete a home visit and make follow-up telephone calls (usually six to eight calls) with patients to monitor their health, ensure that they understand and follow their medication regimen, and help facilitate follow-up visits with the primary care physician and other specialists. After 30 days, the patients are offered 11 months of additional chronic care management coaching from their local health coach. The health coaches provide chronic care management (CCM). This includes a home visit and telephone calls to assess the physical and psychosocial well-being of enrolled patients. Currently, patients may also be referred to CCM by their primary care provider.

¹ Avera eCare Services is a suite of distance telemedicine equipment and services affiliated with Avera Health, a large health system based in Sioux Falls, South Dakota. (See <http://www.averaecare.org/ecare/>.) This program uses Avera eCare's eEmergency services, in which board-certified ER physicians and critical care nurses deliver immediate, supportive care and nursing documentation to CAH emergency departments. (See <http://www.averaecare.org/ecare/what-we-do/eemergency/>.)

- The third phase, or population health phase, will target people at high risk of stroke or heart attack for health coaching and other patient education and engagement services. Health coaches will deliver patient engagement and health literacy tools to rural providers for education, prevention, screening, and shared decision making. Health coaches will educate and encourage patients' participation in their care.

Across all three phases, the program facilitates integration of rural health services by developing clinical programs for heart attack and stroke throughout the care continuum. The program is based on and supports a medical home concept, in which community providers are accountable for participants' overall health. Through the provision of regional resources, this program can provide medical home-like systems to manage and engage participants in their care.

Other key characteristics of the University of Kansas' program are described in Table 1.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by the awardee to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to the program (conducted from October 26 through 29, 2015) in Hays, Kansas. For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we visited the Collaborative's main office in Hays, as well as three rural CAHs (Citizens Medical Center in Colby, Kansas; Gove County Medical Center in Quinter, Kansas; and Phillips County Hospital in Phillipsburg, Kansas) and one FQHC, First Care Clinic, in Hays. We interviewed the Collaborative's executive director, operations director, training manager, transitional care managers, health coaches, medical director, a physician champion, and the stroke and STEMI training managers. We also interviewed several CAH staff, including an administrator, a director of nursing, and a paramedic. We met remotely with the stroke training coordinator from the University of Kansas and with a critical care nurse from Avera eCare Services; we conducted all other interviews in person.

Table 1. University of Kansas: Kansas Heart and Stroke Collaborative characteristics at a glance

Program characteristic	Description
Purpose	The University of Kansas received an HCIA R2 cooperative agreement to bring together 14 rural communities in northwest Kansas to improve outcomes for heart disease and stroke while reducing the cost of care.
Components	<p>The program has three phases—(1) STEMI and stroke protocols, (2) transitional care and chronic care management, and (3) population health—which are implemented through several primary and secondary components.</p> <p>Care management, integrated care, medical home, transitional care coordination, telemedicine (tele-health), evidence-based clinical practice guidelines, home care, and education and training (all primary)</p> <p>Patient and family engagement, health IT (secondary)</p>
Target population	Residents of the 14 counties who were hospitalized with heart attack or stroke or who presented with symptoms of heart attack or stroke to a critical access hospital (CAH) after the program started. In a later phase, residents at risk for heart attack or stroke will be included in the program. The target population for the acute care phase includes all payers. The other two phases target Medicare and Medicaid beneficiaries and dual eligibles.
Theory of change/theory of action	<p>Hypothesizes that evidence-based protocols, provider education, telemedicine, transitional and chronic care management through health coaching, and patient and family engagement will collectively (1) produce measureable improvements in rural Kansans' heart health and post-stroke survival and (2) drive significant reductions in total cost of care related to heart disease and stroke.</p> <p>Hypothesizes that transitional and future transformative payment models will (1) implement a transitional payment model to incentivize collaboration among rural providers and (2) develop a transformational payment model to ensure continued access to care in rural communities.</p>
Payment model	<p>Bundled payments, fee-for-service, value-based purchasing</p> <p>Transitional payment model includes the following:</p> <ul style="list-style-type: none"> • Direct payments to the network for care management services through an intensive care coordination fee • Value-based purchasing adjustments to participating rural physicians and mid-level providers • Modified retrospective bundled payment for certain clinical episodes of care following an inpatient admission
Award amount	\$12,523,441
Launch date ^a	March 1, 2015
Setting	CAHs, primary care providers, community health care clinics, tertiary care hospital, academic medical center, patients' homes
Market area	Rural
Market location	Kansas

Table 1. (continued)

Program characteristic	Description
Core outcomes	<ul style="list-style-type: none"> • Rate of heart attack and stroke in target population (20 percent reduction estimated) • 30-day acute myocardial infarction (heart attack) mortality rate • Specific recognized heart attack and stroke clinical metrics (for example, time to tests, administration of therapy) • Hospital all-cause unplanned readmission • Medication adherence • Target population discharged alive for heart attack, coronary artery bypass graft or percutaneous coronary intervention from January 1 to November 1 of year prior to measurement year • Rates of Emergency Department visits • Rates of transfers to other settings • Inpatient days after readmission

^aAfter a planning period, the awardee's program became operational as of this date.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved interrater reliability on coding; and applied codes to identify the program components, research questions, and concepts that described the implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative on the University of Kansas's implementation experience.

C. Findings

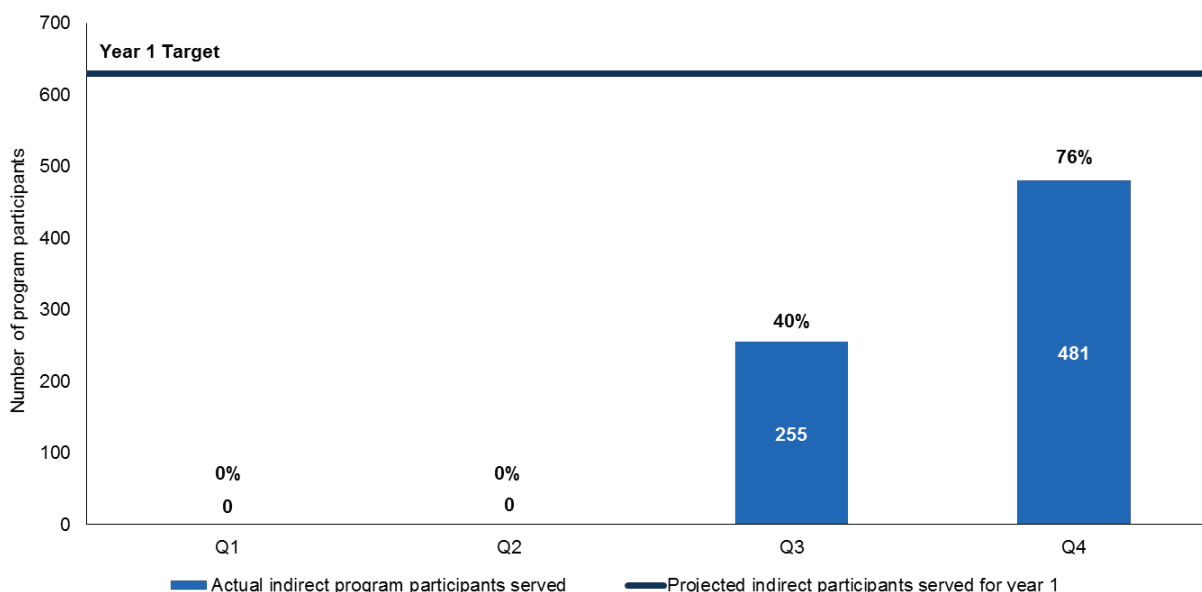
1. How effectively has the program been implemented?

Overall, program has been implemented largely as planned within the projected timeline. At the end of Year 1, the program was behind on meeting its enrollment targets (Figure 1). However, the University of Kansas recently identified a reporting problem such that not all participants served were identified and reported. The awardee is filing an amendment to correct the number of participants served in Year 1, but it is unclear how many more participants this correction would result in. Key accomplishments to date include the following:

- Identifying and reaching the target population.
- Training all participating CAHs in the acute care protocols for heart attack and stroke. All CAHs have adopted the protocols.
- Implementing the tele-health solution at the CAHs (ongoing).
- Hiring and training of transitional care managers and health coaches.
- Initiating transitional care and chronic care management services.
- Instituting outcomes monitoring, benchmarking, and feedback. Beginning to make changes to care processes to improve performance.
- Hiring of an analytics provider to analyze claims data and develop analytics.

Although the Collaborative does not yet have sufficient data to measure improved outcomes, anecdotal evidence indicates that the adoption of the acute care protocols and the related training and monitoring already have saved lives. One clinician recounted a patient presenting to the CAH with suspected stroke, being administered the recommended clot-busting drug (a tissue plasminogen activator), and being rapidly transported to KU. The patient made a full recovery, which was attributed to the rapid response, use of the telemedicine support, and use of the clinical and transport protocols.

Figure 1. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter. The University of Kansas does not have direct program participants. Having cited the reporting problem that not all participants served in Year 1 were identified, the awardee is filing an amendment to correct the number of participants in Year 1.

No significant changes to the program design have been made to date, although the Collaborative has made some refinements as it operationalized the program. For example, the Collaborative identified the need for and hired a training manager to oversee the work of the transitional care managers and health coaches. This enabled the executive director and operations director to focus on other areas such as stakeholder engagement and the expansion of the Collaborative's efforts. Another change occurred after realizing that no commercial IT tool could support the program's CCM and future population health management activities (for example, identifying and tailoring programs for high-risk populations, tracking services provided, sharing information securely, and ensuring compliance with Medicare billing rules). Instead, the

Collaborative's staff developed their own CCM tool. Clinicians and administrative staff spent many hours designing, testing, and refining this tool and developing policies, procedures, and training around its use.

Buoyed by participating providers' enthusiasm, the Collaborative moved up the timeline for deployment of health coaches in participating communities. The Collaborative also accelerated work on its proposed transitional and transformational payment models.

The Collaborative's early accomplishments have sparked interest throughout Kansas. With approval and encouragement from the Centers for Medicare & Medicaid Services (CMS), the Collaborative is in discussions with two rural health networks (one in north central Kansas and the other in northeast Kansas), plus several rural communities in southeast Kansas, about participating in the Collaborative and establishing their own regionalized approaches. One or more of these organizations will likely join during the first half of Year 2, which would demonstrate scalability and replicability of the Collaborative's interventions earlier than expected. The HCIA R2 award will not be increased to pay for the participation of any additional communities or regions.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

Although we distinguish between primary components (care coordination and management, transitional care management, evidence-based guidelines, telemedicine, integrated care, home health, supporting medical home) and secondary components (patient and family engagement, health IT) for evaluation purposes, the Collaborative considers them part of an integrated program. The key program facilitators, challenges, and barriers affect multiple components. We discuss them here under the program component that they most directly affect. Furthermore, because they differ significantly, we discuss the facilitators, challenges, and barriers for phase 1 (acute care), separately from those for phase 2 (transitional and chronic care coordination and management) and phase 3 (population health).

a. Phase 1: Acute care**Care coordination and management through education and training of providers on evidence-based guidelines.**

“Rural providers must be generalists, taking care of a broad range of patient needs in their communities, while we have entire teams who live and breathe stroke and STEMI care. That is why we believe it is increasingly important to fill this knowledge gap, working to reduce the significant time (some say 15 years) from medical research/evidence to transformation of clinical practice.”

—Operations director

The CAHs, HaysMed, and KU staff received education and training and implemented evidence-based acute care stroke and heart attack clinical practice guidelines and protocols (see examples in Section F) to ensure that people presenting with stroke and heart attack symptoms receive appropriate, timely treatment, preventing further morbidity and mortality and improving

outcomes.

The most significant challenge the Collaborative faced and continues to face is the individualism that characterizes rural providers, competition for patients between rural communities, and what the Collaborative perceives as skepticism towards “big city” solutions to “small town” problems. The Collaborative strives to develop a trusting environment among participating providers. The executive director of the Collaborative is well-placed to address this challenge, as he has experience in both worlds—he practiced family medicine in a small town in northwest Kansas; held a faculty appointment at the University of Kansas School of Medicine in the city of Wichita, Kansas; and served as director of the Kansas Department of Health and the Environment, where he spearheaded initiatives to improve the health of rural Kansans. He builds a collegial environment by personally engaging participating providers in discussions on improving care.

“In a rural area we need to convince CAHs that we’re not here to do bad things to your already struggling hospital situations. We’d like to improve on patient care and try and expedite things in hospitals and help any way we can—from EMS to hospital situation to transfer to treatment. That’s probably been the toughest part of it—convincing folks that yes, you’re doing a good job, but we can do it better. And when that comes down from KU or Hays, they don’t swallow that as easily. Nobody likes big brother telling them what to do.”

—Medical director

Another challenge is changing the culture in the communities, which is described by staff as the “hard part” and a long-term process that requires constant attention, commitment, and passion on the part of everyone involved.

The Collaborative places great importance on securing commitment from, building consensus among, and communicating regularly with participating providers. The members of the management team (executive director, operations director, and training manager) are from the region (northwest Kansas), have extensive experience (more than 20 years) in rural health care delivery, and have significant professional networks within Hays and the surrounding rural communities.

“You change the culture—this takes a lot longer than 6 months, 12 months, maybe even three years. It’s going to take ongoing effort and it’s going to be the people on the ground to reach those locations, each of those CAHs, each of those clinics, each of those physician practices. It’s more than just any one person can do, and we’re all passionate about and are a part of this. . . . The biggest part is each patient and each disease process. What can we change to address that? Maybe it’s nothing more, nothing less, than rethinking and making small changes.”

— *Stroke program manager*

The management team spends significant time meeting one-on-one with participating providers to hear and address their concerns and to solicit their input and participation. During the site visit, the executive director described his regular trips to the region to meet in person with providers, particularly if they had concerns about the program and the protocols.

All participating sites were invited to and appointed one or more representative to the Collaborative’s four standing committees.

The careful process used to develop, vet, and build consensus around the heart attack and stroke protocols facilitated the acceptance and adoption of the protocols. The Clinical Committee conducted its organizational meeting in December 2014 with more than 25 participants, who

“When you talk to people in rural areas one of their biggest concerns was . . . we get ready to transfer somebody with STEMI and this doctor wants this done, and another doctor wants this done and it’s just a little bit different. . . . So we’re just collating that down to something that the cardiologists were willing to work with. This was a little bit challenging.”

— *Stroke program manager*

represented each of the 14 communities in northwest Kansas. Clinical specialists at the University of Kansas presented the draft protocols at this meeting. The committee discussed the process for review, revision, and adoption of the protocols. The Collaborative’s program managers then met with clinical staff at each CAH to complete a gap analysis, which compared existing practices with the draft stroke and heart attack protocols. These analyses resulted in refinements to the protocols, as well as CAH-specific work plans to meet protocol

requirements. This work culminated in an in-person meeting of the Clinical Committee, with 37 attendees representing all of the participating communities. The attendees finalized the protocols, explored common challenges and opportunities, and reached consensus on performance measures to evaluate compliance with the acute care protocols.

The evidence-base, clarity, and succinctness (that is, one page in length) of the protocols facilitate their adoption (examples of a few protocols are in Section F). Clinicians described the

"It's wonderful how they [protocols] work. You show up at the facility and see what's going on and make some decisions. And the nursing staff know exactly what they have to do. It's a beautiful thing to watch."

— *Medical director*

protocols as "simple and uniform," which "speeds everything up" in the emergency room (ER) and makes nursing and other staff "more comfortable" with what they're doing.

- **Telemedicine (tele-health).** To supplement the staffing and expertise available at the CAHs, the

Collaborative elected to install Avera's eCare tele-health product, which includes a Polycom® camera and speakerphone² with a fiber optic connection, in the 11 CAHs. Several CAHs have completed the onboarding for Avera and are using this solution. The onboarding process takes an average of 90 days and involves the installation of the phone and camera, the sharing of logistics information and clinical protocols, and the training of staff.

- To activate the eCare system, a provider simply presses a button and is immediately connected with a board-certified emergency medicine physician and critical care nurse at the Avera eEmergency hub. This supports the consistent application of clinical protocols and timely access to specialists and treatment. The Avera nurses also document care delivery processes, freeing the ER staff to work directly with the patient without the added burden of documenting as they are working.

During the site visit we observed how an Avera eCare critical care nurse could use the eCare Polycom camera in the ER to monitor and document the treatment and use of the protocols—zooming and panning in, and viewing a monitor displaying vital signs or other ER equipment.

The medical director described the use of Avera eCare along with the protocols as a "game changer" for CAHs, changing the attitude of staff for not only stroke and STEMI but also for trauma. Several of those interviewed explained that this could result in fewer patient transfers from CAHs to a larger facility such as KU or HaysMed. The medical director explained that this solution gives mid-level providers at the CAH (for example, nurse practitioners and physician's assistants) confidence in how they are managing and treating a patient. They appreciate having the backup that Avera eCare clinicians provide on screen in the ER.

b. Phases 2 and 3: Care transitions and population health

As mentioned in the Introduction, the transitional care and chronic care management phase began in August 2015 and is expected to be fully implemented by spring 2016. The population health phase is to be implemented in late 2015 and early 2016.

Care coordination and management. Following a hub-and-spoke model, care coordination and management is hosted at HaysMed (the hub), with transitional care managers and health coaches located in the outlying rural facilities (spokes). The transitional care managers provide education through TCM services to recently discharged participants who suffered a stroke or

² Polycom is a corporation that develops video, voice, and communication technology and manufactures equipment.

heart attack. After 30-days of TCM, the patients may receive another 11 months of CCM services from a local health coach. CCM services are also provided to people who are at risk of heart attack or stroke.

To promote CCM among providers, the Collaborative contracted with a local physician champion in each of the participating communities. The physician champion serves as a local resource for the community's health coach. In addition, the physician champion communicates regularly with other physicians and providers in the community to promote CCM and to solicit feedback on the program.

Transitional care management and home health. Coordinated through HaysMed, the program provides TCM services for 30 days to people who were discharged from a hospital to their home after suffering a heart attack or stroke. HaysMed provides transitional care through nonphysician practitioners. Two advanced practice registered nurses (APRNs) were hired as transitional care managers to provide TCM services. At the time of the site visit, they had provided services to approximately 60 participants. The transitional care managers meet with patients at the hospital if possible, and contact discharged patients by phone to set up a home visit. (A small number of people contacted have refused a home visit so they receive telephone TCM services.) After 30 days, the participants are referred to the local health coach to receive CCM services for up to a year after discharge.

The transitional care managers and health coaches are the primary means by which the Collaborative reaches the target population. They serve as patient advocates, helping patients develop self-management skills through patient education and empathetic coaching. The health coaches participate in TeamSTEPPS training on communication, teamwork, safety, leadership, and critical thinking skills.³ The curriculum addresses patient assessment, care planning, medication reconciliation, home safety, tobacco cessation, data collection and quality reporting, privacy and security, public speaking, and regulatory compliance.

³ Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) is an evidence-based set of teamwork tools aimed at optimizing patient outcomes by improving communication and teamwork skills among health care professionals. It includes a comprehensive set of ready-to-use materials and a training curriculum to successfully integrate teamwork principles into any health care system. (See <http://www.teamsteppsportal.org/>.)

“Some patients think that the clinic or their primary care providers are going to call them or make their appointment, and they don’t. A lot of these patients are quite a distance from their providers. They may have three follow-up appointments to make. We [transitional care manager and coaches] make sure they get those follow-up appointments, help them with their medications, make sure they are on the right regimen, and help prevent readmission by putting these pieces into place. We are somebody the person can call with questions.”

— *Transitional care manager*

Primary care physicians and other providers report excitement about TCM and CCM because while they may see patients for 10 minutes and “hear and see what the patient wants them to,” the coaches go into participants’ homes and spend much more time with the person, so “they see a whole other side” and “what the person needs.” One transitional care manager reported that physicians stopped her to say, “you’re doing good things,” and “we’ve seen your reports come through.”

Identifying eligible patients for TCM who are residents of the participating communities has proved difficult. Some patients are hospitalized outside of the northwest Kansas region, including in other states such as Nebraska and Colorado. The transitional care managers developed a tracking system, work-around solutions, and contacts in hospitals to monitor the location and status of eligible patients. Sometimes, they identify patients by requesting medical records from the hospital; by contacting the patient’s provider; or by contacting the STEMI or stroke program managers located at KU, where patients are often transferred.

Transitional care managers and health coaches are known to have good rapport with community providers. As noted by the training coordinator, “They just are all well respected, loved in their community, and have strong clinical backgrounds.” This facilitates interactions with both the providers and the patients.

TCM and CCM promote patient and family engagement. Health coaches educate and encourage patients’ participation in their care. When the Collaborative moves to the population health phase, it will provide patient engagement tools to rural providers for education, prevention, screening, and shared decision making.

Health IT. In addition to Avera eCare, the program leverages other health IT, including electronic medical records (EMRs), data analytics, and population health tools. The Collaborative, in partnership with its analytic and claims data subcontractors, PYA and Cobalt Talon, will use data analytic tools to identify at-risk people in the region and help match them with appropriate services. Several health IT challenges were described during the site visit, including challenges related to having different provider EMRs.

The Collaborative had originally intended to use the providers’ EMR data to monitor performance and to support the TCM, CCM, and population health components. Getting information from the different provider EMRs proved problematic, however. Providers often did not know how to extract certain information from their EMRs. For example, they could not pull a list of all patients diagnosed with hypertension or diabetes. The cost to build interfaces to the

EMRs was prohibitive. Instead, the Collaborative devoted more resources to getting the data from EMRs and other sources.

Because the CAHs' EMRs do not readily support the documentation needed to monitor performance, the Collaborative added resources to allow for pulling information out of each CAH's EMR and then using either secure VPN access or going on site to manually extract the rest of the data. The process and extraction methods vary by EMR.

The operations director noted that they cannot pull the basic type of data that a typical accountable care organization (ACO) would pull out of an EMR without resorting to manual extraction, even in the largest participating clinics, so "that's probably the reality everywhere, unfortunately."

"I think the toughest part of that whole sequence has been IT. It's hard to get that information. Everybody's got tons of information in their EMRs but none of the EMRs talk together, none of them communicate to the point that we can readily mine that information."

— Medical director

Excel spreadsheets and templates were created by the Collaborative to collect data from the EMR to support CCM and TCM. The Collaborative is creating a platform that feeds claims data and manually extracted EMR data into these spreadsheets for the health coaches to use, rather than paying the "tremendous expense" for interfaces that aren't really going to "bring enough value to the right process."

3. How does the awardee make decisions about program-related changes?

The Collaborative's executive leadership team (executive director and operations director) in collaboration with the steering committee make decisions about the program overall. The Collaborative's medical director and clinical experts from KU (for example, neurologists and cardiologists) make changes to the acute care protocols in collaboration with the participating sites. The executive staff, training manager, and medical director are responsible for changes to the transitional care and chronic care management components. Overall, we observed a clear focus on quality and continuous improvement across the program.

The Collaborative tracks and monitors its progress across the different program components, as well as the program overall. During the implementation process, the Collaborative realized that a staff member was needed to oversee training and administration for the transitional care and chronic care management components. In bringing on a full-time training manager, the Collaborative has substantially expanded the level of training and support available to frontline staff and has freed the executive leaders to spend more time working directly with participants' leadership teams and other internal and external stakeholders (for example, site leaders, health plans, and the state Medicaid agency).

The Collaborative seeks feedback on trainings for acute care protocols (STEMI and stroke boot camps), with the goal of refining the content and delivery. For example, the training

coordinators expanded the time allocated to exercises related to interpreting electrocardiograms (EKGs).

To track quality of care for suspected heart attack or stroke at the participating sites, two Collaborative staff members conduct chart reviews with a CAH staff member to monitor key

"There's a stamp that you put on EKG that says STEMI yes/no and providers initials, date, and time. And there's a date and time at the top of the EKG itself, so you compare the time that they initial it to the time the EKG is done, and we check to see if it's less than 10 minutes. It's helped us already. I don't know whose idea the stamp was but it was brilliant!"

— Medical director

quality metrics (such as time of arrival to time to EKG). The quality reports are shared with each site on a quarterly basis. CAHs receive both the aggregate information across all participating sites as well as their own individual data. Both CAH staff and the program directors reported examples of how performance feedback has helped providers change processes to meet the protocol guidelines and provide more timely testing and treatment.

Several informal and formal evaluation mechanisms assess the TCM and CCM services. The Collaborative has implemented patient satisfaction surveys to track the effectiveness of the transitional care managers and health coaches. The managers and coaches also communicate with program leaders and with each other on a regular basis through a variety of mechanisms, including in-person conversations, secure email, and secure text messages. Several of the health coaches noted that they would like to reconvene with the other coaches and program leaders to discuss progress, confirm work approaches (such as how to document a certain type of issue or strategies for enrolling patients), and learn more about best practices. The training manager was planning such a meeting in late 2015.

"Whatever problems we encounter, we all understand that this is a development in the process. So, we fix it and then we figure out a process to help keep it where it needs to be."

— Transitional care manager

"The coaches all have each other's emails. They feel very comfortable asking me questions. They text me all the time, you know, 'What about such and such' or 'I've got this situation.' So there's lots of great communication that way. We plan to bring the coaches back on a regular basis because the networking is critically important. . . . I find when one has identified a question or issue everybody else will probably have it too. I send it out to all the health coaches in order to improve things."

— Training manager

The Collaborative staff have dynamic and fluid communications with each other; this includes the executive leaders, training manager, transitional care managers, health coaches, IT support, and administrative support. During the site visit, staff noted that if they had a question, they could approach a peer or a supervisor and receive timely feedback. The health coaches and transitional care managers uniformly described the executive leaders and training manager as helpful and responsive.

One program-related change came from the Center for Medicare & Medicaid Innovation (CMMI) when the program officer encouraged the Collaborative to expand its program. This would ensure an adequate number of participants to show statistical significance when analyzing program outcomes and to demonstrate replicability. The Collaborative is currently in discussions

with two rural health networks and facilities in the Salina, Kansas, area to join the program. The plan is for new participants to begin by implementing the acute care protocols and then move into the TCM and CCM services. New participants will not be funded by CMMI; they will use local resources to participate.

4. To what extent has the awardee begun to plan for or implement payment reforms?

The Collaborative is developing transitional and transformational payment models for rural health providers. The transitional model modifies existing payment structures to incentivize local Collaborative care. The transformational model provides alternatives to cost-based reimbursement for rural providers, with a focus on preserving local access to care.

The awardee accelerated both models to meet the need for resources to support services. The proposed transitional model included three components: (1) reimbursement for care management services, (2) an intensive care coordination fee and retrospective bundled payment, and (3) the awardee's application for a waiver of CMS's "nearest appropriate facility" reimbursement rule for ambulance transports made pursuant to network-approved acute care protocols (the awardee may not have understood at the time it applied for the waiver that no HCIA awardees would be granted any waivers). Payers include Blue Cross and Blue Shield of Kansas and state Medicaid, including two Kansas Medicaid managed care organizations.

The University of Kansas is also developing a transformational payment model for financially distressed CAHs and for rural hospitals now participating in the Rural Community Hospital Demonstration Program, which is testing the feasibility and advisability of cost-based reimbursement for small rural hospitals that are too large to be CAHs.⁴ The proposed model provides the option of these rural hospitals transitioning to a Community Care Center. The model will enable these rural communities to maintain local access to essential health care services while realizing savings for the Medicare and state Medicaid programs. The Collaborative has submitted its payment model to CMS for review.

The Collaborative had planned to use Medicare claims data to test the transitional payment model prior to submission to CMS. However, staff could not obtain the claims data in time, so they used historical data from HaysMed and drew on lessons learned from a comprehensive cancer payment model from KU and from the Jayhawk Accountable Care Organization, a recently founded ACO in Kansas City that the awardee is part of.⁵ The awardee cautions that the payment model should not be considered final until tested against Medicare claims data.

⁴ See <https://innovation.cms.gov/initiatives/Rural-Community-Hospital/>.

⁵ See <http://www.bizjournals.com/kansascity/news/2014/01/02/kcs-newest-accountable-care.html>.

"There's really not a mechanism for a hospital to maintain its emergency room and those outpatient ancillary services that are important for our project, and important for the community. Time-critical diagnoses, acute care protocols, and chronic care management don't work if you don't have the local resources in the community."

— *Operations director*

The payment model originally included a small cost to participating Medicare beneficiaries (approximately \$7 per participant per month). However, the Collaborative found that even this nominal cost decreased enrollment from 70 percent to 80 percent to around 50 percent of people approached to participate. As a result, the Collaborative has requested a waiver of the beneficiary payment.

The current payment structure of a single payment for TCM may limit providers' participation. The primary care provider and the Collaborative can both provide TCM services reimbursable under Medicare, and both may seek to receive reimbursement. As currently conceptualized, the payment model would allocate the Medicare transitional care benefit to the Collaborative, not the primary care provider. Additional discussion with providers will be necessary to ensure equitable distribution of payments.

The payment models have the potential to make a greater impact on rural health care in Kansas beyond the Collaborative's goals. Currently, one in five rural hospitals is at risk of closure. An effective transformational payment model could help to preserve community resources and access to care.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we concluded that a rigorous impact analysis would be feasible. We proposed a robust difference-in-differences design to estimate the impact of the HCIA R2 award on beneficiaries in rural northwest Kansas. The analyses will focus on two populations of interest in the award—beneficiaries in rural Kansas who present at a CAH with heart attack or stroke (cohort 1) and those who are at risk of heart attack or stroke (cohort 2). Our analysis will compare changes in outcomes for the beneficiary populations of the participating CAHs and communities to changes in outcomes for beneficiaries of CAHs and communities in southwest Kansas, specifically those served by members of the Southwest Kansas Regional Health Network.

In addition, we will identify some process outcomes (for example, whether heart attack patients were given percutaneous coronary interventions within 90 minutes of arrival) available from the six-month baseline of chart audits already completed by the awardee and in post-implementation data for the treated beneficiaries. However, this information will be limited to beneficiaries of the awardee CAHs. As such, the additional process measures may be limited to a pre-post design using only beneficiaries treated by participating providers.

E. Next steps

We look forward to continuing to work with the University of Kansas for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next step in the impact analysis is to identify and pull claims data for all Medicare beneficiaries who suffer from a heart attack or stroke and receive treatment at either the treatment or comparison group CAHs (cohort 1). After identifying the treatment and comparison beneficiary populations, we will compare our list of treatment beneficiaries to a finder file, provided by the awardee, which lists beneficiaries treated by the participating CAHs. By comparing those identified by the evaluation team to the list of beneficiaries provided by the awardee, we will validate our methodology for identifying heart and stroke patients at comparison CAHs and make adjustments, if necessary.

After attributing beneficiaries to the treatment and comparison groups, we will create the variables necessary for the analysis, including outcome and explanatory variables, and compare demographic and baseline characteristics across those two groups to ensure sufficient comparability between the two populations. If there are many significant differences, we will conduct a propensity score analysis to match comparison beneficiaries and better align characteristics across the treatment and comparison groups. We will describe our findings in future reports. Finally, we will produce initial impact estimates for the first one to two quarters of program operations, depending upon data availability.

F. Supplemental Materials

This section contains supplemental materials mentioned throughout this narrative and provided by the awardee.

KANSAS HEART AND STROKE COLLABORATIVE
A healthcare innovation award program of The University of Kansas Hospital

Acute Stroke Patient Selection (tPA Checklist)

Patient Selection Criteria

- ☐ YES ☐ NO Age 18 or over
- ☐ YES ☐ NO Clinical Diagnosis of Ischemic Stroke with a measurable neurologic deficit NIHSS _____
- ☐ YES ☐ NO Time of "Last Known Well" established less than 4.5 hours before treatment would begin; Date and Time _____

Contraindications

- ☐ YES ☐ NO Time of onset of symptoms or last known well is greater than 4.5 hours
- ☐ YES ☐ NO SBP > 185 or DBP is > than 110mm HG despite treatment
- ☐ YES ☐ NO Recent significant head trauma (< 3 MO)
- ☐ YES ☐ NO Recent Intracranial or Spinal surgery (< 3 MO)
- ☐ YES ☐ NO CT findings of ICH or SAH

Considerations

- ☐ YES ☐ NO Care team unable to determine eligibility
- ☐ YES ☐ NO Presence of intracranial conditions that may increase risk of bleeding like brain aneurysm, vascular malformation and some brain neoplasms
- ☐ YES ☐ NO Recent active internal bleeding
- ☐ YES ☐ NO Platelets < 100,000, PTT > 40 sec after heparin use or INR > 1.7, or known bleeding diathesis
- ☐ YES ☐ NO Use of Novel oral anticoagulants in past 48 hours
- ☐ YES ☐ NO Increased risk of bleeding due to co-morbid conditions (example: hemorrhagic diabetic retinopathy)
- ☐ YES ☐ NO Suspicion of SAH
- ☐ YES ☐ NO Rapidly Improving with near resolution of symptoms
- ☐ YES ☐ NO History of ICH
- ☐ YES ☐ NO History of recent Ischemic Stroke
- ☐ YES ☐ NO CT findings with major infarct signs
- ☐ YES ☐ NO Major surgery or serious trauma (< 15 days)
- ☐ YES ☐ NO Left heart thrombus
- ☐ YES ☐ NO Bacterial endocarditis
- ☐ YES ☐ NO Life expectancy < 1 year or severe co-morbid conditions
- ☐ YES ☐ NO Pregnancy
- ☐ YES ☐ NO AMI < 3 MO

KANSAS HEART AND STROKE COLLABORATIVE
A healthcare innovation award program of The University of Kansas Hospital

Acute Stroke Patient Selection (tPA Checklist)

Additional Warnings for patients treated between 3—4.5 hours

- ☐ YES ☐ NO Age > 80
- ☐ YES ☐ NO Prior stroke and diabetes
- ☐ YES ☐ NO Any anticoagulant use prior to admission (even if INR < 1.7)
- ☐ YES ☐ NO NIHSS > 25
- ☐ YES ☐ NO CT findings > 1/3 MCA

Other factors

- ☐ YES ☐ NO IV or IA tPA (Activase/Alteplase) given at outside hospital
- ☐ YES ☐ NO Patient/Family refused treatment

12/2015



Stroke Team Patient Evaluation

Today's Date: _____	DATE/TIME LAST KNOWN WELL _____
---------------------	---------------------------------

NIH Stroke Scale

Category	Description	Time :	Score	Score
Level of Consciousness	0= Alert 1=Not Alert but arousable by mild stimulation 2=Not alert; Requires repeated stimulation to attend 3=Responds only with reflex motor/or autonomic reflex or unresponsive			
Level of Consciousness Questions	0= Answers both month and age correctly 1=Answers one question correctly 2=Answers neither question correctly			
LOC-Commands	0= Performs both tasks correctly 1= Performs one task correctly 2=Performs neither task correctly			
Gaze	0= Normal 1= Partial Gaze Palsy 2= Forced Deviation			
Visual Fields	0= No visual loss 1= Partial Hemianopia 2= Complete Hemianopia 3= Bilateral Hemianopia			
Facial Movement (Facial Paresis)	0= Normal symmetrical movements 1= Minor paralysis 2= Partial paralysis 3= Complete paralysis of one or both			
Motor Function-Arms (Right and Left)	0= No drift 1= Drift 2= Some effort against gravity 3= No effort against gravity 4= No movement UN = Amputation or joint fusion	R / L	R / L	
Motor Function-Legs (Right and Left)	0= No drift 1= Drift 2= Some effort against gravity 3= No effort against gravity 4= No movement UN = Amputation or joint fusion	R / L	R / L	
Limb Ataxia	0= Absent 1= Present in one limb 2= Present in two limbs UN = Amputation or joint fusion, explain			
Sensory	0= Normal: no sensory loss 1= Mild to moderate sensory loss 2= Severe to total sensory loss			
Best Language	0= No aphasia 1= Mild to moderate aphasia 2=Severe Aphasia 3= Mute			
Dysarthria	0= Normal 1= Mild to moderate dysarthria 2= Severe dysarthria UN =Intubated or other physical barrier, explain			
Extinction & Inattention (formerly Neglect)	0= No abnormality 1= Visual, tactile, auditory, spatial, or personal inattention 2= Profound hemi-inattention/extinction			
	Total Score			

Plan of Care Discussed:

- ED Provider: _____
- Other Hospital: _____
- KU Stroke Service: _____

IV tPA (Activase/Alteplase)-Treatment Plan

☐ **Contraindicated per Dr.** _____

☐ > 4.5 hour window

☐ BP > 185/110

☐ Recent significant head trauma (<3mo)

☐ Recent intracranial or spinal surgery (<3mo)

☐ Current Intracerebral Hemorrhage

☐ **Other** _____

☐ verbal or written consent obtained (**do not** delay treatment while consent is obtained)

Notes:

[illegible]

Nurse Signature	Date/Time /
Provider Signature	Date/Time /

PATIENT IDENTIFICATION

<div style="background-color: #0056b3; color: white; padding: 5px; font-size: 0.8em;"> KANSAS HEART AND STROKE COLLABORATIVE <small>A healthcare innovation award program of The University of Kansas Hospital</small> </div>	<h2 style="margin: 0;">ACUTE ISCHEMIC STROKE ORDERS & TRANSPORT PROTOCOL</h2>
STROKE WORKUP <input checked="" type="checkbox"/> Date / Time patient last known well: _____ <input checked="" type="checkbox"/> Vital Signs: Minimum of every 15 minutes (with continuous O2 and cardiac monitoring) <input checked="" type="checkbox"/> O2 at 2 liters per nasal cannula; titrate for SpO2 of 94% or greater <input checked="" type="checkbox"/> Two peripheral IV's (18 gauge preferable, one in AC) <input checked="" type="checkbox"/> Labs: CBC, BMP, PT/INR, PTT, Blood Glucose, Troponin, and pregnancy test if applicable (*to save door to needle time, you may give tPA prior to the lab results back if patient has no HX of major liver, renal or bleeding issues and is not on Warfarin or NOAC) FOC labs acceptable <input checked="" type="checkbox"/> Diagnostic: CT Head Without Contrast (notify radiologist for STAT read); EKG <input checked="" type="checkbox"/> Strict NPO <input checked="" type="checkbox"/> NIH Stroke Scale Score: _____ <input checked="" type="checkbox"/> Complete tPA/Alteplase Checklist: <div style="margin-left: 20px;"> <input type="checkbox"/> Patient meets tPA criteria, proceed with tPA orders below. _____ Consult with Stroke Specialist obtained <input type="checkbox"/> TPA contraindicated due to _____ (cross through tPA orders) </div> <input checked="" type="checkbox"/> Notify Dispatch / Transport Team Best Family Member Phone Number – cell _____ -- _____ --	
PRE TPA/ALTEPLASE <input checked="" type="checkbox"/> Monitor BP every 15 minutes. Keep BP < 185/110mmHg <div style="margin-left: 20px;"> <input type="checkbox"/> Labetalol 10 mg IVP (may repeat x 1). (Hold for HR < 60) <input type="checkbox"/> Nicardipine gtt. 5 mg/hr to max of 15 mg/hr <input type="checkbox"/> Or Antihypertensive agent of your choice </div> <input checked="" type="checkbox"/> Start Normal Saline IVF drip at 75 mL per hour <input checked="" type="checkbox"/> Obtain signed informed consent. <input checked="" type="checkbox"/> Weight in kilograms _____ (if unable to weigh, obtain from patient/family or average 2 estimated weights)	
TPA (Activase/Alteplase) PREP / ADMINISTRATION Calculations Checked by: (2 initials) _____ & _____ <input checked="" type="checkbox"/> Mix tPA with sterile water as provided by manufacturer to a concentration of 1 mg/mL <input checked="" type="checkbox"/> Calculate Total Dose (will be the bolus + infusion): <div style="margin-left: 20px;"> • Total Dose: (0.9mg/kg) = _____ (max of 90 mg) </div> <input checked="" type="checkbox"/> Waste unneeded tPA portion. <div style="margin-left: 20px;"> • Waste: (100mg – total dose) = _____ mg. </div> <input checked="" type="checkbox"/> Administer Bolus over 1 minute IV push <div style="margin-left: 20px;"> • Bolus Dose: 10% of total dose (total dose x 0.1) = _____ mg. / Time Given: _____ </div> <input checked="" type="checkbox"/> Administer Infusion Dose as a secondary infusion over 1 hour. <div style="margin-left: 20px;"> • Infusion Dose: 90% of total dose (total dose x 0.9) = _____ mg. / Time Started: _____ </div> <input checked="" type="checkbox"/> Flush tPA remaining in IV tubing with NS – use same rate as tPA infusion.	
DURING INFUSION / POST INFUSION / TRANSPORT PREPARATION: <input checked="" type="checkbox"/> Monitor Vital Signs every 15 minutes. <div style="margin-left: 20px;"> <input type="checkbox"/> Keep SBP <180mmHg, DBP <105mmHg, (stop tPA if unable to maintain SBP <180 or DBP <105 constantly with Antihypertensive agents) <ul style="list-style-type: none"> <input type="checkbox"/> Labetalol 10 mg IVP (may repeat x 1). (Hold for HR < 60) <input type="checkbox"/> Nicardipine gtt. 5 mg/hr to max of 15 mg/hr </div> <input type="checkbox"/> Keep SBP > 100: May try NS 500ml IVF bolus as an initial option <input type="checkbox"/> Monitor Neuro Checks every 15 minutes. <input type="checkbox"/> If sudden change in baseline mental status, acute headache, or vomiting, STOP t-PA infusion. Call Med Control <input checked="" type="checkbox"/> Monitor for Adverse Reactions e.g. Angioedema (may follow anaphylactic management or protocol) or Hemorrhagic Complications (Abdominal and/or flank pain, hemoptysis, hematemesis, shortness of breath/rales/rhonchi) STOP tPA infusion; Call Medical Control CAUTIONS <div style="margin-left: 20px;"> <input type="checkbox"/> NO Anticoagulation or Antiplatelet Therapy for 24 hours <input type="checkbox"/> No Foley insertion/re-insertion, central venous line placement or arterial puncture at a non-compressible site for at least 24 hours after tPA <input type="checkbox"/> Avoid insertion of nasogastric tube for 6-8 hours after tPA administration </div> <input checked="" type="checkbox"/> Send copy of CT Head Scan (do not delay transport-report can be faxed) <input checked="" type="checkbox"/> Send patient records with documentation of allergies, current medications, past medical history (can be faxed) **all that is needed is the EMTALA paperwork with patient—DO NOT DELAY TRANSFER FOR COPY OF RECORDS <div style="text-align: right;">REVISED 12/2015</div>	
<div style="border: 1px solid black; padding: 5px;"> <input type="checkbox"/> Telephone order from Dr. _____ Nursing signature/RAV: _____ Date: _____ Time: _____ Provider Signature: _____ Date: _____ Time: _____ </div>	PATIENT IDENTIFICATION TEMPLATE

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APPENDIX B.28

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

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REPORT

APPENDIX B.28

HCIA Round Two Evaluation: The University of North Carolina at Chapel Hill

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 8, 2015)

Successes

- The University of North Carolina at Chapel Hill completed hiring for the Better Back Care (BBC) program; current staff include three full-time care managers, a quality improvement coordinator, a program administrator, a part-time pain psychologist, and a part-time exercise physiologist.
- The awardee created a customized checklist for acute lower back pain in the primary electronic medical record (EMR) system and makes patient education handouts automatically available to patients when the participating providers complete the checklist.
- The awardee enrolled more than 20 practices, provided training for their staffs, incorporated checklists into their EMR systems, educated them on new referral options available as part of BBC, and continued to offer ongoing support.
- The awardee created a customized care management database that allows for consistent data collection and decision support.

Challenges and strategies to address them

- Patient enrollment numbers are low. To address this challenge, the awardee has engaged additional, nonprimary care practices (for example, chiropractors and urgent care providers) spanning a wider service area; enrolled patients based on ICD-10 and EMR codes, rather than requiring a referral from providers; and simplified the patient consent process.
- Provider engagement is not as strong as anticipated, so program staff have been visiting practices more frequently to discuss data, identify barriers and facilitators, and post BBC flyers in exam rooms to remind providers about the project.
- The University of North Carolina has not been able to get Medicaid data through a third party as planned and has applied directly to the state to get the data it needs.

Lessons learned

- Having the checklist available in the Epic system before training providers in how to implement the BBC project is important for maintaining the initial momentum.
- Some providers are “intimidated” by the length of the checklist; the awardee is educating providers on the most important questions to complete and shortening the list to address this issue.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 8, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings;

(2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Better Back Care (BBC) program, which is being implemented by the University of North Carolina at Chapel Hill. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the University of North Carolina's BBC program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to the University of North Carolina; and a review of awardee reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the BBC program, this narrative addresses four questions:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
 3. How does the awardee make decisions about program-related changes?
 4. To what extent has the awardee begun to plan for or implement payment reforms?
-

We also provide a brief summary of the University of North Carolina's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The University of North Carolina received an HCIA R2 cooperative agreement to pilot its BBC program in September 2014 and enrolled its first participant in February 2015. The BBC's target population includes Medicare and Medicaid beneficiaries diagnosed with acute low back pain (LBP) who are seen in participating practices across a seven-county region in North Carolina. Participating practices have been primarily recruited from three medical groups: (1) the University Medical System's employed faculty physicians (referred to hereafter as the University of North Carolina Medical Group), all of whom are affiliated with the University of North Carolina School of Medicine, and many of whom are practicing part-time in internal medicine or family practice clinics; (2) the University of North Carolina Physician's Network, an association of 42 independent practices spread across 12 North Carolina counties that receives operational support from the University of North Carolina; and (3) Piedmont Health System (PHS), 11 community and rural health centers with employed providers, some of which are training sites for the University of North Carolina School of Medicine.

The goal of the BBC program is to increase the use of evidence-based conservative care for acute LBP in the region. This includes reducing unnecessary spinal injections, imaging, and surgery through the following:

- Encouraging participating providers to use a checklist that incorporates decision support with all patients who present with acute LBP (a paper copy of the checklist is in the appendix)
- Employing program-based registered nurse care managers to contact program participants via telephone after their first visit with a participating provider, using shared decision making and a customized care management decision support tool to encourage conservative care and support referrals to the appropriate level of BBC-approved provider (for example, a physical therapist rather than a spinal surgeon, if appropriate)
- Building a referral base of spinal specialists who practice evidence-based conservative care, as well as other professionals—such as an exercise physiologist and pain psychologist—who can provide the appropriate level of care

The program is based on the model of care provided at the University of North Carolina Spine Center, which has a co-located multidisciplinary team that includes a variety of specialty providers (including neurosurgeons, physiatrists, and physical therapists). The Spine Center

considers itself the leading regional provider in delivering patient-centered, high quality, and cost-effective care for LBP management.¹

For any patient presenting with acute LBP to a participating clinic, providers are expected to use an electronic medical record (EMR)-embedded BBC checklist (or a paper version when the EMR version is unavailable). Both versions prompt providers to ask a series of evidence-based questions, including a depression screening, medical history, and physical function assessment, and to perform a series of basic physical examinations. They also provide decision support to guide providers toward using the most conservative—but appropriate—treatment approach. Patient handouts describing LBP self-treatment best practices are automatically generated for the providers using EMR-embedded checklists (handouts are also available for providers using a paper version of the checklist).

Patients are eligible to participate in BBC if they (1) are Medicare or Medicaid recipients; (2) present with acute, nonspecific LBP (for example, not due to an infection or a fracture) that has lasted fewer than three months; and (3) have not seen a provider for back pain in the last six months. To identify eligible individuals, the care managers undertake a multistep process. First, they pull a daily list of billing and diagnosis codes to identify Medicare or Medicaid patients who might have acute LBP.² The care managers then review the medical records, including any completed or partially completed checklists, to select patients who are likely eligible for the program, entering this information—using a customized care management tool—into a participant database. At this point, the patient is officially enrolled in BBC. The care managers contact these patients by phone within 48 hours of the initial visit for back pain. If the care manager discovers no additional information that would disqualify the individual from the program (such as previous LBP-related visits to other providers in the past six months or previous surgery involving spinal hardware), the participant will continue to be enrolled in BBC; otherwise, he will be determined to be ineligible.

Once individuals are enrolled, they receive care management. Care managers contact them within 48 hours (as described above) and again within two weeks of the first provider appointment that addresses acute LBP. During the calls, care managers use a customized tool that includes questions about (1) medical history; (2) Patient Reported Outcomes Measurement Information System (PROMIS) index indicators of pain interference, mental health, and physical function;³ (3) Consumer Assessment of Healthcare Providers and Systems (CAHPS) indicators

¹ See <http://news.unhealthcare.org/news/2014/july/unc-receives-6-million-grant-to-fund-better-back-care-program>.

² The program initially had required that care managers consider only patients with completed checklists, but program staff learned that the requirement was interfering with patient recruitment and eliminated it. (See Section C.1.)

³ PROMIS is a publicly available set of questionnaires and assessment tools that measure patient-reported health status. It was developed with funding by the National Institutes of Health. See <http://www.nihpromis.org/default>.

of provider satisfaction;⁴ and (4) decision support that, along with shared decision making between care managers and participants, helps determine next treatment steps. The next treatment steps may include suggesting certain exercises to mitigate back pain, recommending over-the-counter medications, or suggesting referrals to other providers. Care managers also use the two-week call to ask the individual to consent to participate in program data collection. If consent is given, the individual's insurance identifier will be used for the program's internal data analysis, and he or she will be contacted to participate in telephone-based surveys conducted by the University of North Carolina's Carolina Survey Research Lab at 3, 6, and 12 months. The surveys are conducted to gather information for BBC's internal program tracking and evaluations. The care managers use information gathered through the 48-hour and two-week calls to determine whether they need to continue to follow participants through additional telephone conversations, coordinating care and encouraging such positive health behaviors as exercise. This care coordination and support can continue for as long as care managers deem necessary to treat an episode of acute LBP, though usually no longer than 3 months.

Several different types of medical professionals are available for care manager or participating provider referrals. The specialists at the University of North Carolina Spine Center offer advice to participating providers when needed and maintain protected appointment slots for BBC patients so that they can quickly follow up with any concerns indicated by the provider when conservative care appears to be insufficient. For participants too far away to travel to the Spine Center, program clinical leaders have identified spinal specialists across the program service area who provide high quality conservative care for acute LBP. Finally, a pain psychologist and an exercise physiologist provide services to BBC program participants based on a referral from either a participating provider or a care manager. The exercise physiologist is employed and fully funded by BBC and provides free services to participants, while the pain psychologist receives some support from BBC for administrative tasks but bills Medicare and Medicaid for her services.

Some of the staffing and support for BBC was already available within the University of North Carolina's medical school and various centers, providing a large pool of qualified and engaged professionals to staff the program. For example, the two principal investigators (PIs) and an additional co-investigator, all practicing University of North Carolina Medical Group physicians, have been active and instrumental champions for the program. One of the PIs, who is a primary care provider, has visited all participating practices, speaking about the importance of the BBC program and reinforcing provider knowledge on how to use the checklist. The other PI, a neurosurgeon, engages specialists across the BBC service area to ensure that participating providers (which include chiropractors and will soon include urgent care providers in addition to primary care providers) will have a referral network approved by BBC leaders that consists of specialists who practice conservative and evidence-based treatment. Finally, the co-investigator,

⁴ CAHPS is a set of standardized patient questionnaires developed under the sponsorship of the Agency for Healthcare Research and Quality to assess consumers' experiences with health care. See <https://cahps.ahrq.gov/index.html>.

a physiatrist, helps with provider recruitment by visiting potential new practices and providing ongoing training and support to BBC's exercise physiologist. All three of the investigators maintain protected time in their schedules to see participants referred by BBC care managers and participating primary care providers, facilitating easy and early access to specialty care.

Components of program implementation and evaluation are segmented across several centers at the University of North Carolina. The university's Translational and Clinical Sciences Institute was responsible for integrating the BBC checklist and the handouts into the Epic EMR systems for the University of North Carolina Medical Group and the University of North Carolina Physician's Network.⁵ The university's Sheps Center for Health Services Research built the customized care management tool, is maintaining the database of participating participant data, and will conduct the awardee's internal evaluation of BBC. Finally, the Carolina Survey Research Lab administers the 3-, 6- and 12-month surveys over the telephone and gives the data gathered through this effort to the Sheps Center. Table 1 summarizes key BBC characteristics.

Table 1. University of North Carolina: BBC characteristics at a glance

Program characteristic	Description
Purpose	The University of North Carolina's BBC program aims to encourage conservative, evidence-based treatment of acute LBP. A BBC checklist that is integrated into the EMR (or, in some instances, on paper) prompts participating providers to follow an evidence-based treatment protocol for all patients presenting with new, acute LBP and offers decision support. From lists of patients with LBP-related diagnostic or Medicare billing codes or provider referrals, program care managers find and recruit those meeting the program's eligibility criteria. The care managers use decision support generated by a BBC care management tool, and shared decision making, to guide treatment decisions. During these discussions with participants, and throughout the program, The University of North Carolina has emphasized conservative treatments—such as home exercises, physical therapy, and consultation with a BBC-funded pain psychologist or exercise physiologist—over invasive, costly, and not evidence-based imaging, injections, and surgeries that are frequently overused.
Components	<ul style="list-style-type: none"> • Care management (primary) • Evidence-based medicine (primary) • Health information technology (secondary) • Shared decision making (secondary)
Target population	Participants seen at BBC practices for the first time or within their first episode of care who: <ul style="list-style-type: none"> • Have LBP ongoing for fewer than three months that is not attributable to a specific cause • Are 18 years or older • Are Medicare beneficiaries (fee-for-service [FFS] or Medicare Advantage) or Medicaid recipients • Speak English⁶

⁵ The Centricity EMR, used by PHS, already had an acute LBP checklist and health education materials before the BBC program started. These providers now have the option to pull LBP assessment and findings into their EMR's documentation of a patient's visit using a dot phrase added by PHS central leaders specifically for the program.

⁶ BBC is planning to hire a Spanish-speaking care manager, and will begin accepting Spanish-speaking participants at that time.

Table 1. (continued)

Program characteristic	Description
Theory of change/theory of action	<p>BBC is intended to decrease costs and improve quality of care for patients with acute LBP through:</p> <ul style="list-style-type: none"> • Encouraging primary care providers to use a checklist that guides evidence-based assessment and treatment of LBP during the first office visit • Employing care managers who facilitate appropriate access to care, shared decision making, and coordination of care across primary and specialty care providers to guide participants to the lowest appropriate level of care or refer them to specialists known to provide conservative treatment • Ensuring a referral network of specialists who provide conservative, evidence-based care as well as other professionals—such as an exercise physiologist and pain psychologist—who can provide the appropriate level of care
Payment model	<p>Fee-for-service, bundled payment, value-based purchasing</p> <p>BBC is creating two payment models for implementation once the HCIA R2 cooperative agreement ends: (1) bundled payment for an episode of acute LBP, which is intended to engage specialty care providers, and (2) a pay-for-performance model, which will fund additional support provided to acute LBP patients and is aimed at primary care providers or specialists who want to use a model of care similar to BBC</p>
Award amount	\$6,034,888
Launch date ^a	February 23, 2015
Setting	Participating provider offices and in the community
Market area	Rural, urban, and suburban
Market location	Seven-county region in central North Carolina
Core outcomes	<ul style="list-style-type: none"> • Increase in patient satisfaction—as measured by the Clinician and Group CAHPS survey, a standard questionnaire • Decrease in care that does not conform to evidence-based guidelines (excess spinal injections, imaging, and surgery)

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by the University of North Carolina to the implementation and monitoring contractor that cover the first year of the award (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to the University of North Carolina (from October 5 through 8, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

We visited participating providers at two urban practices that use the Epic EMR, one of which is part of the University of North Carolina Medical Group, and the other is affiliated with the University of North Carolina Physician's Network. We also visited a rural community health center that uses the Centricity EMR and is part of PHS, and the University of North Carolina

Spine Center. In addition to interviewing providers at the various locations, we met with key BBC program leaders, including the two PIs and co-investigator, the quality improvement coordinator, the program administrator, nurse care managers, the exercise physiologist, the pain psychologist, the leader of the internal evaluation, and the programmer who integrated the BBC checklist into the Epic EMR system. After the site visit, we conducted telephone interviews with the creator of the care manager database and the person who leads development of the payment models.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we made audio recordings of the interviews and used them to confirm the accuracy of our interview notes and to add context. A team member who did not attend the site visit received training; achieved inter-rater reliability on coding; and, in close consultation with the site visit team, applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this narrative.

C. Findings

1. How effectively has the program been implemented?

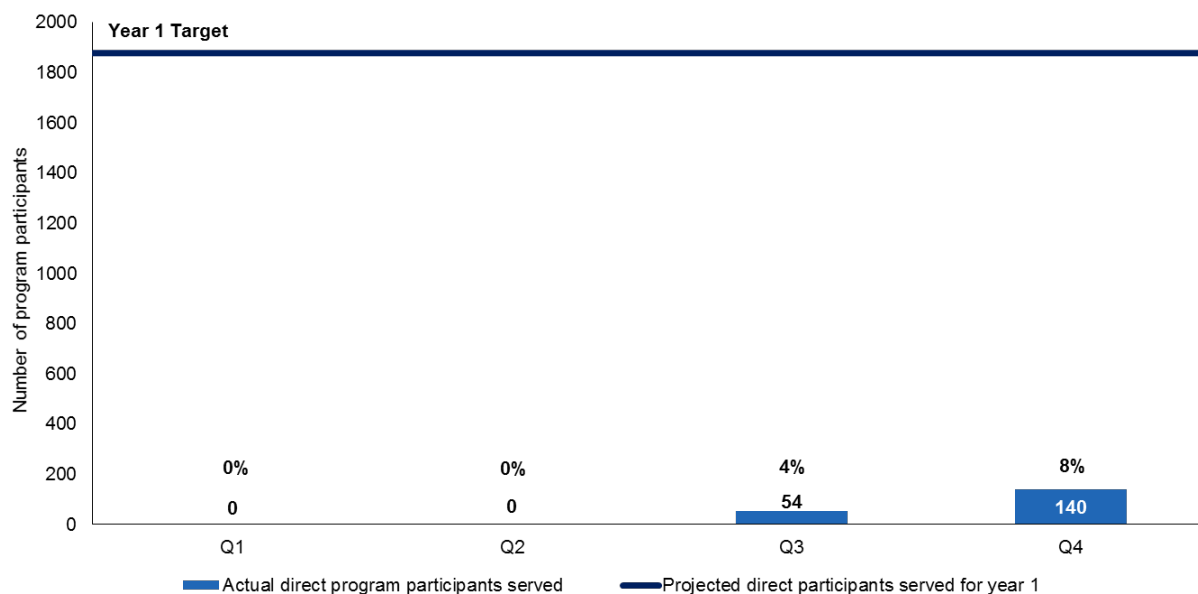
An experienced and dedicated core team of staff has generally implemented the BBC program as originally designed. However, start-up took longer than expected, and it was necessary to make key changes to boost enrollment. Program staff have encountered major problems in reaching the enrollment targets because fewer acute LBP patients than anticipated visited participating providers and because many participating providers did not complete the checklist or program referrals. In addition to updating the program to improve enrollment numbers, BBC staff determined that original enrollment targets were unrealistic; they are working with CMMI to adjust them.

BBC participating providers are seeing fewer acute LBP patients than expected, resulting in a referral stream that is slower than projected. To mitigate this problem, BBC is recruiting more providers and expanding its referral base. BBC was initially designed to recruit participants from the primary care practices of three medical groups—(1) the University of North Carolina Medical Group, (2) the University of North Carolina Physician’s Network, and (3) PHS—that are sources of referrals to the University of North Carolina Spine Center. However, BBC staff found that many of the primary care providers in these practices are seeing and referring fewer acute LBP patients than anticipated. The program has expanded its provider recruitment beyond the original three medical groups to include other types of providers and to cover two more counties. BBC’s medical leaders sought and identified spine specialists who practice conservative and evidence-based care, in line with the treatment approach supported by the BBC program, as referral options for participants in the larger service area who are not responding to conservative care.

An additional barrier to recruitment was the original requirement that a checklist be completed prior to an eligible individual being contacted by a BBC care manager. Many providers were not completing the checklist or referring patients. This requirement was eliminated. Now nurse care managers pull daily lists from the Centricity EMR system of patients who have ICD-10 codes associated with LBP, and they use medical records data to assess patients' eligibility for the program even if the checklist has not been completed. BBC leaders are aiming for a similar arrangement with the Epic EMR system used by the University of North Carolina Medical Group and by practices in the North Carolina Physician's Network. At the time of the site visit, the team was still working through many university governance requirements and levels of approval to facilitate the process of getting the care managers a daily list of patients with ICD-10 codes potentially related to LBP. In the interim, nurse care managers identify participants through an Epic EMR system report, which lists patients flagged by a provider or nurse at the University of North Carolina Medical Group or at the University of North Carolina Physician's Network as having acute LBP.

Although enlarging the program's catchment area and eliminating the checklist requirement are expected to increase participant numbers, BBC will not reach original enrollment projections, which, as it turns out, were overestimates (see Figures 1a and 1b). When calculating the initial projections, BBC staff did not have access to real numbers of publicly insured acute LBP patients served at the University of North Carolina Medical Group and by practices in the University of North Carolina Physician's Network because the Epic EMR, which allows for much of the data analysis that is currently possible, was not in place. Because many Medicare beneficiaries suffer from chronic (rather than acute) back pain and the number of chronic versus acute visits would be impossible to discern using claims only, many of the larger number of visits counted in the original estimate may have included chronic rather than acute LBP patients. Some BBC leaders indicated that the projection did not take into account some barriers to enrollment. One is that patients might have difficulty getting an appointment with a BBC-participating provider while they are in the three-month acute phase, leading them to obtain care from another provider, perhaps at an urgent care center. This renders them ineligible for BBC.

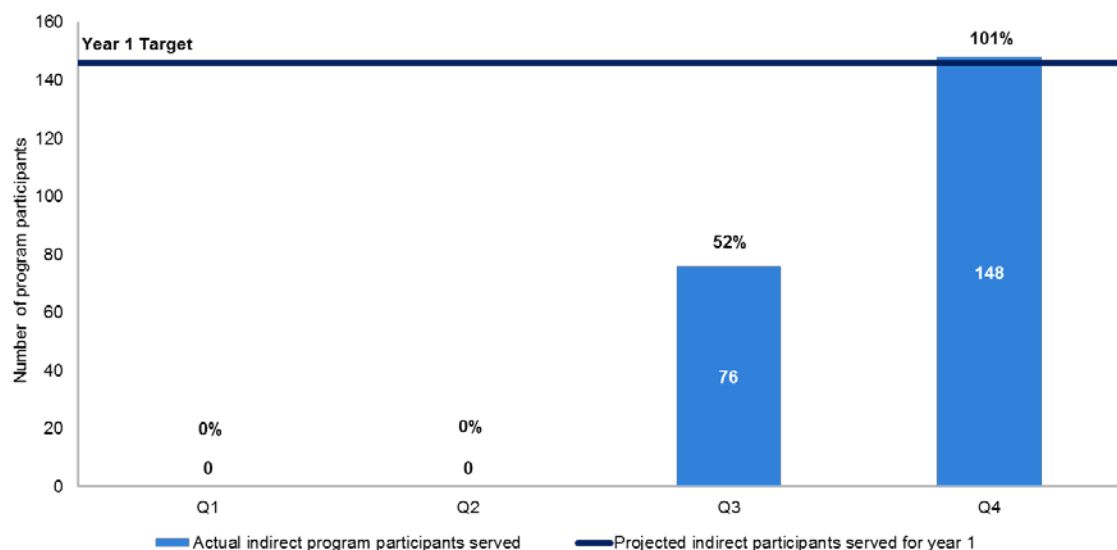
Figure 1a. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter.

Figure 1b. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter.

BBC implementation launched slower than anticipated because proposal writers did not account for the difficulty of starting a new program within a large, bureaucratic university system. When the University of North Carolina received the award, it had not yet developed many of the key components of the program, such as the LBP checklist or the care manager tool; the awardee's application did not require full development of program materials. Layers of bureaucracy within the university and its health care system made it impossible to rapidly obtain approval and manpower to develop new tools and program the checklist into the Epic EMR system. Moreover, BBC was initially envisioned as a quality improvement initiative. But once the program staff began to collect personal data from participants, it became a research project and required institutional review board (IRB) approval. A great deal of the leaders' time early in the program was consumed by IRB work. Then, because of the time required to hire staff, establish participant enrollment processes, and design and debug the checklist and other BBC enhancements to the EMR systems, the early focus of the program staff was to get systems in place quickly. This was a priority so that providers and care managers could start engaging individuals, but it resulted in the need to later rework hastily developed tools and program protocols.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The key implementation facilitators and barriers often affect multiple components, which are closely linked. Although we are distinguishing between the two primary and two secondary program components for evaluation purposes, the program staff consider them part of an integrated program. For example, one major facilitator that crosses program components is the depth of university resources available to maintain program momentum. One of the original principal investigators left the program, but two others were able to step in and replace him in a timely manner.

a. Primary component: care management

The care management component involves care managers using a customized care management tool and contacting participants within 48 hours and again within two weeks of the first provider appointment to address acute LBP. The care managers may continue to follow participants via phone, coordinating their care among multiple providers for as long as needed to treat their episode of LBP (typically no longer than three months).

A major facilitator is care management team, which benefits from collegiality, rapport, and experience. The care management team is made up of three seasoned registered nurses who are experienced in conducting public health research and motivational interviewing and who appear to work very well with each other, physicians, and program staff. They regularly share ideas and ways to improve recruitment and care delivery. They understand the importance of collecting good data for the program and use their clinical expertise and interviewing skills to ensure they get accurate information from participants and understand participant preferences

and challenges so as to encourage and direct participants to the care that makes the most sense for them.

Another facilitator is the implementation and evaluation expertise brought by the University of North Carolina's Sheps Center. The Sheps Center has considerable experience constructing customized decision-support tools for various interventions related to university research efforts. Sheps Center employees built the customized care management decision support tool and worked with the program team to develop a robust data collection and analytics process. The center was able to quickly set up the tool using previously available code customized to fit BBC's specific data collection needs and workflow. Sheps Center employees receive funding from BBC to work continuously with program staff and the care manager team to refine the tool through the duration of the program.

b. Primary component: evidence-based medicine

The evidence base for the treatment of acute LBP supports the most conservative treatment where appropriate. Key BBC staff regularly reinforce the use of evidence-based medicine (EBM) with providers through continually training providers and new medical and family practice residents on checklist use and providing data on BBC performance as feedback. The BBC quality improvement lead, care managers, PIs, and other clinicians frequently work with providers at participating practices to reinforce the use of EBM. They help train new rotating residents on LBP and checklist use, and they share reports of practice-level performance on BBC processes with providers. The use of EBM, through following the decision support available in the care manager tool, is also a regular part of the care managers' work during their conversations with participants and with providers after the 48-hour and two-week calls.

A practice-specific culture of process improvement, use of the checklist as a resident-training tool, and participation in complimentary initiatives facilitate the use of EBM. Providers at the University of North Carolina Medical Group practice we interviewed indicated that they have a culture of continuous quality improvement and frequently implement new initiatives, so they have generally been receptive to using the checklist. The University of North Carolina Medical Group and PHS physicians who supervise and teach residents and medical students in their clinics use the checklist and BBC process as teaching tools. One clinical leader at a University of North Carolina Medical Group practice explained that, although depression screening is part of BBC's checklist and is especially important when screening patients presenting with nonspecific acute LBP, it is also part of a broader initiative across all practices affiliated with the University of North Carolina medical school to enhance the amount of attention given to the behavioral health aspects influencing LBP.

On the other hand, primary care providers face many competing demands and see relatively few BBC-eligible acute LBP patients, leading to low provider engagement and presenting a key barrier to the consistent implementation of EBM for BBC. Like primary care providers everywhere in the U.S., BBC primary care providers have full patient schedules during clinic hours, a host of patient complaints to address during any given visit, and many are

adjusting to using a new EMR system. As a result, a number of providers reported not having the time or resources to focus on LBP or to use the checklist. Primary care physicians who see patients full-time at one clinic reported seeing no more than three patients a week for whom acute LBP was a reason for the visit. Moreover, it is likely that many of these patients are not insured by Medicare or Medicaid so they are not eligible for BBC.

Many University of North Carolina Medical Group providers spend only a couple of days per week in the BBC practices. Their part-time status results in their seeing even fewer acute LBP patients in any given month. Further, some residents rotate through participating clinics for only a few weeks or months. For providers who see few patients appropriate for the BBC checklist—compared with practice-level initiatives such as completing depression screening for every patient—remembering to adjust their workflow to complete the BBC checklist is more difficult and can be a low priority. To address the challenges associated with many of the providers' part-time status and residents' frequent rotations in and out of clinics, care managers visit clinics twice a week to meet with residents and remind them of the program details. They also take these opportunities to train newly arriving providers, pointing out when and how they can use the checklist and posting reminders about LBP and the BBC program. Finally, the BBC quality improvement lead uses reports she shares with practice managers, physicians, and staff to keep them abreast of their progress in referring patients to the program and to identify and work more closely with physicians who do not regularly use the checklist to understand why they are not doing so and address issues that arise when possible.

c. Secondary component: health IT

Health IT is a core component of supporting the care managers, participating providers, and research centers as they implement and evaluate the program. It plays a role in a multitude of program tasks:

- Embedding the checklist into the Epic EMR system
- Creating a flag in the EMR systems for acute LBP as a reason for a visit
- Pulling information on eligible patients from the EMR systems
- Maintaining a database housing lists of eligible participants and key program benchmarks
- Developing the survey tool and data reports for the 3-, 6-, and 12-month follow-up
- Providing ongoing support for refinements to the checklist and systems, including adding BBC components to each new provider practice in both University of North Carolina Medical Group and the University of North Carolina Physician's Network

Initial delays introducing functioning EMR components for BBC decreased provider engagement, partly because providers were trained on BBC implementation but unable to use the system immediately thereafter to reinforce the training and demonstrate the benefit of the checklist. System delays sometimes necessitated retraining once a practice's system was working properly.

As mentioned, many layers of governance surround the university's Epic EMR system, making updating the checklist with new refinements difficult. Delays in gaining approvals through the university governance process were further exacerbated by the fact that the top priority for the university's programming team was completing migration to and implementation of Epic for the University of North Carolina Medical Group, the University of North Carolina Physician's Network, and other university facilities, rather than implementing and refining the BBC checklist. The migration to the Epic EMR system continued into May 2015, eight months after the cooperative agreement began. The timing of the migration also meant that at the same time BBC staff were introducing providers to the LBP checklist, providers' focus was often on learning an entirely new EMR system that necessitated changing practice workflow in ways that impacted all their patients rather than the small subset served by the BBC.

The Centricity system (PHS' EMR) and the care manager tool also created challenges in early program implementation. Although the Centricity EMR already had a built-in LBP checklist before the start of the BBC program, the button designed for providers to use when referring patients to the BBC care managers worked intermittently. Further, the pressure to enroll participants as soon as care managers were on board led to the care managers' tool being created hastily. It required nearly constant refinements. For example, in one refinement, several questions were added to the tool (such as a screening question about whether or not patients have previously had back surgery). More refinements, including the automation of completing items in the tool from data already in the EMR, are slated for the coming year.

d. Secondary component: shared decision making

Care managers and providers implement shared decision making. The care managers indicated that they help coach and educate participants about how to care for themselves, and they talk through treatment next steps. The physicians are encouraged to spend time conversing with patients with acute LBP about the benefits of taking a conservative approach to treatment, and to share patient education materials with them. Barriers to implementing shared decision making include the competing priorities of providers and corresponding lack of time to counsel patients on alternatives.

3. How does the awardee make decisions about program-related changes?

Although the implementing sites have no say in the BBC program design, program staff take into account the sites' experiences in implementing the program, as they streamline BBC processes. Decision-making related to program implementation is centralized in the BBC leadership team. The two PIs and the co-investigator hold primary decision-making authority and oversee the BBC staff.

Program leaders meet regularly to review and respond to monitoring data and to consider input from a wide variety of stakeholder groups, especially frontline staff. The investigators and other BBC staff—including the administrative leaders, care managers, exercise physiologist and pain psychologist—meet biweekly to identify potential areas for improvement in program operations. The University of North Carolina also convened a nine-member advisory

board that includes representatives from the clinical sites throughout the program and experts in relevant fields, such as quality improvement, health services, and private insurers. Program leaders seek input from the board quarterly; they held the first meeting in April 2015.

BBC staff produce updated reports every two or three weeks on metrics and performance targets that are used in the decision-making process. Reports include data on enrollment, percentage of patients with indicated acute LBP who also have a completed checklist, changes in pain level between the care managers' 48-hour and two-week calls, and percentage of participants with a clinically meaningful change in pain level. Program staff will review data from participant surveys conducted at 3, 6, and 12 months after enrollment as soon as they are available. As with the 48-hour and two-week care management conversations, the surveys use the PROMIS index to collect additional data on physical function and pain as well as CAHPS survey questions to measure patient satisfaction.

Interviewees indicated that they use the various data sources and reports to monitor and respond to insights about their participant population as well as to monitor practice compliance. For example, they note which providers are or are not completing the checklist and the number of patients each provider refers to the program. This information helps program staff to pinpoint which providers in a given practice they should approach to discuss how they can make better use of the checklist and increase referrals to the program. Initial results showed that a much larger percentage of Medicaid participants were enrolled than anticipated (nearly one-third)—likely due to PHS, which serves a large Medicaid population. This prompted program leaders to consider the transportation challenges of the low-income rural population and to begin expanding the offerings of exercise physiology classes to practices in a wider variety of locations so that more people could participate.

Feedback from care managers influences changes and updates in program implementation. Early feedback from care managers revealed that the program's original definition of "acute" was not detailed enough. This led the BBC leaders to establish clearer rules for program participation overall. For example, many patients were displaying pain patterns that the BBC describes as "acute-on-chronic," wherein a patient may have had low-level back pain for a long time not requiring any treatment but it suddenly worsened and became acute. Program staff, including administrative leaders and the PIs, worked with care managers to clarify the enrollment criteria and confirmed that these patients were considered eligible for the BBC as long as they had not seen a provider for back pain in the previous six months. "Acute-on-chronic" patients are not excluded just because they have chronic LBP. In addition, care managers, who are responsible for asking participants to consent to participate in the research during the two-week call, indicated that the process was too cumbersome, so the consent script was shortened.⁷

⁷ BBC leaders consider their consent rate to be high, estimating it to be 60 percent at the time of the site visit.

“The problem is that any quality improvement should cover any patient. Medicare should care about the whole population. If they want less back pain in their Medicare population . . . then they should fund the study to decrease back pain earlier. . . . A lot of docs with few public insurance patients click the button and get the message ‘Thank you for completing the checklist, but your patient is not enrolled.’ This is really discouraging.”

— *Participating physician*

Program staff continually adjust BBC activities in response to participating provider feedback. For example, participating providers were critical of prohibiting privately insured patients from participating in the program. Not being able to offer the care management service to all their patients limits provider interest and engagement in the program. In response, BBC worked with CMMI to include privately insured patients who would otherwise be eligible for enrollment as indirect participants. Now privately

insured patients can take classes offered by the BBC exercise physiologist when space is available.

Another example of program staff’s responsiveness to challenges was in how leaders addressed an idiosyncrasy that practices identified in the Epic EMR, which resulted in physicians not automatically having access to the checklist after medical assistants or nurses flagged a patient as having a complaint of acute LBP. Practice front office staff have now been trained to completely log out of the patient’s EMR chart so that the providers can easily log in under their own names and readily use the checklist for patients already identified as having LBP. Providers report this change in workflow has actually solved other long-standing problems that were unrelated to the BBC program.

In response to providers reporting that the checklist is much too long, BBC staff now train providers on which questions are the most important to capture and are working with Epic staff to make a streamlined checklist version available for providers next year. BBC works with providers who are hesitant to complete the EMR-based checklist by also providing paper-based checklists and ways to easily add checklist information and documentation into their standard note-taking process.

4. To what extent has the awardee begun to plan for or implement payment reforms?

BBC does not plan to implement payment reforms until the HCIA R2 cooperative agreement ends. At the time of the site visit, the payment model lead was working to assemble a payment model workgroup consisting of managed care contracting professionals, clinical leaders, a data analyst, and others—within the University of North Carolina and in the broader community. At the time of this writing, BBC leaders expected to hold the first workgroup meeting before the end of 2015 and to begin meeting regularly in 2016. Using data generated from the program (once the sample size is large enough and claims data are available), the awardee plans to prepare two payment models:

1. A bundled payment for an episode of acute LBP, aimed at specialty care providers

2. A pay-for-performance model, which will provide funds for additional support for LBP patients, aimed at primary care providers or specialists who want to employ a model of care similar to BBC

BBC initially planned to implement the pay-for-performance model as an interim payment option that would be available sometime after the first year, but CMMI indicated that the Centers for Medicare & Medicaid Services would not be able to implement a new payment model while the cooperative agreement is in effect.

D. Impact evaluability assessment

We believe that a difference-in-differences evaluation design is feasible based on the availability of baseline and intervention data for the treatment and comparison groups. But if the awardee continues to experience substantial enrollment challenges, the impact evaluation may be severely limited.

The awardee originally estimated that about 1 percent of the enrollees would be Medicaid participants. In practice, the program has a much larger proportion of Medicaid beneficiaries: about 38 percent. According to program staff, obtaining Medicaid data from North Carolina can be quite challenging; these data are often unavailable to researchers until years after the date of service. BBC program leaders put in a request to the state for Medicaid data for its own internal evaluation but are not confident about obtaining these data in a timely fashion. As of this writing, it was unclear whether Medicaid data for the patients in participating practices for the treatment group will be available to them or the impact team. It is also likely that Medicaid data will not be available for the comparison group.

E. Next steps

We look forward to continuing to work with the University of North Carolina for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

We plan to identify comparison practices from metropolitan areas outside of the Research Triangle region because the awardee's recruitment efforts may saturate that region. Once comparison practices have been identified, we will draw Medicare (and Medicaid, if available) beneficiaries from these practices who are age 18 and older and who meet the awardee's inclusion and exclusion criteria. We will use claims-based algorithms reported in the literature to identify patients with acute, nonspecific LBP for the comparison group and for the pre-period treatment group.

We will validate the above claims-based algorithms by examining diagnosis and procedure codes reported on post-intervention beneficiary claims, to ensure that we are identifying comparison and pre-period treatment beneficiaries using a similar set of codes. We will be unable to replicate the awardee's inclusion criterion of pain duration of less than three months using claims data; however, the awardee states that this can be assumed if the patient does not have any LBP-related claims in the past six months. Lastly, we will exclude non-English-speaking patients because the awardee is focused on the English-speaking population⁸.

⁸ Spanish speakers will be included in the sample for the period after which they become part of the program, should this occur.

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APPENDIX B.29

REGENTS OF THE UNIVERSITY OF CALIFORNIA AT SAN DIEGO

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REPORT

APPENDIX B.29

HCIA Round Two Evaluation: Regents of the University of California at San Diego

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–November 6, 2015)

Successes

- The major accomplishment of the Heart Attack and Stroke Free Zone (HSF-Z) program from the Regents of the University of California at San Diego has been the progress it has made filling positions at the leadership level and at the implementing sites (for example, medical groups). The awardee's leadership team is fully staffed and engaged with each of the eight participating medical groups to help them effectively meet the project goals. The team has provided one-on-one and group trainings, presentations, and solutions that specifically meet the needs of each group and has helped secure physician buy-in.
- Each of the eight medical groups has an on-site physician champion who is helping to ensure smooth implementation of the program.

Challenges and strategies to address them

- The awardee experienced significant delays in receiving institutional review board (IRB) approval. It had to submit several revised applications before securing approval. These delays pushed back the launch date of the program, which is one reason medical groups are behind in meeting their enrollment goals. One medical group is considering adjusting its budget and enrollment target going forward. Another medical group decided to pre-enroll participants (that is, patients who have agreed to participate) while awaiting IRB approval.
- Recruitment and enrollment have proven to be more challenging than leaders at the University of California at San Diego and at the medical groups originally envisioned. Initially, several groups generated lists of all eligible patients from medical records and then "cold called" potential participants. Because this yielded low enrollment numbers, groups have since implemented other strategies, such as engaging patients at other times (for example, at the time of a scheduled appointment) and opening up the study to other locations in order to have a larger eligible population.

Lessons learned

- The University of California at San Diego did not anticipate that a large number of eligible patients would decline to participate in the study. The awardee assumed that if patients were offered a free program that was good for their health, they would not say no. The HSF-Z project has given the awardee an opportunity to gain some insight into how the presentation of information to different types of patients might affect whether or not they participate. Having health coaches knowledgeable in cultural differences and in how these differences affect the way in which patients view their health is an important lesson learned.
- Having leaders at the University of California at San Diego personally present the program to providers at implementing sites has also been useful in encouraging provider engagement and in improving recruitment rates.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit interviews on November 6, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected awardees whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Heart Attack and Stroke Free Zone (HSF-Z) program, which is being implemented by the Regents of the University of California at San Diego. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the awardee's HSF-Z program, including initial implementation experiences and initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This report presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to the University of California at San Diego, and a review of the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the HSF-Z program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the University of California at San Diego's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The University of California at San Diego received an HCIA R2 cooperative agreement to implement the HSF-Z program. HSF-Z aims to prevent heart attacks and strokes in San Diego County, California, by achieving better control of hypertension and cardiovascular disease. HSF-Z is led by the University of California at San Diego in partnership with eight San Diego-area medical groups, which represent the majority of all medical care provided in San Diego: (1) Sharp Rees Stealy, (2) Scripps Foundation, (3) University of California at San Diego Family Medicine Group, (4) Vista Community Clinic, (5) Neighborhood Healthcare, (6) Arch Health Partners, (7) San Ysidro Health Center, and (8) North Coast Family Medical Group. The program launch date, as defined by the awardee, was January 19, 2015.

The goal of the HSF-Z program is to decrease heart attacks and strokes in San Diego County. To achieve this, the University of California at San Diego intends to activate patients and physicians by raising awareness of cardiovascular risk factors; introducing evidence-based clinical practices; providing supportive, ongoing health coaching; and providing innovative home health monitoring to ensure that patients adhere to their medication regimen. In addition, the awardee is seeking to reduce medical costs by \$6.2 million in three years by reducing the incidence of major adverse cardiac events.

The target population is Medicaid, Medicare, and dually eligible patients who are at high risk for a major adverse cardiovascular event such as a heart attack, stroke, or sudden death due to cardiovascular complications. Patients in palliative care, those with less than six months of life expectancy, and those with end-stage renal disease are excluded from the program. In addition, patients are not eligible for the program if they have met the health goals for their condition and are on the recommended medication bundles for their condition.

HSF-Z's theory of change (TOC) or theory of action (TOA) is that providing patients with a health coach and appropriate evidence-based medication therapy will reduce the incidence of cardiovascular events, improve survival rates, and reduce overall health care costs. To achieve the desired results, HSF-Z is employing the primary program component of care management

through patient navigators or health coaches. Specifically, HSF-Z provides participants with ongoing health coaching to support them in the following:

- Medication initiation and adherence
- Education and follow-up communication
- Access to relevant community resources
- Medication therapy management

The health coaches also track key patient metrics. Health coaches work with physicians to ensure patients are put on appropriate, evidence-based medications (referred to as the “medication bundles”) for hypertension, diabetes, and cardiovascular disease. Through the HSF-Z program, physicians recommend appropriate medication bundles for enrolled patients based on tested medication therapy principles and practices. Some implementation sites (for example, medical groups) have also involved pharmacists to provide ongoing medication review.

Secondary program components include both patient and provider engagement and support, which include the following:

- Through the HSF-Z program, wireless blood pressure cuffs will be distributed to participants; health coaches provide education on the importance of self-monitoring blood pressure. The University of California at San Diego is currently evaluating technology platforms for the blood pressure cuff and plans to roll out a pilot in Year 2.
- Through the “Be There San Diego” campaign, the awardee is planning a broader educational outreach effort for the entire San Diego population.
- Through the University of Best Practices (UBP), a monthly education forum for medical directors from San Diego–area medical groups, the awardee has provided ongoing provider education about the HSF-Z program.

Other key characteristics of HSF-Z are described in Table 1.

Table 1. University of California at San Diego: HSF-Z characteristics at a glance

Characteristic	Description
Purpose	<ul style="list-style-type: none"> Prevent heart attacks and strokes in San Diego County by achieving better control of hypertension and cardiovascular disease
Components	<ul style="list-style-type: none"> Care management through patient navigators or health coaches, including medication therapy management (primary) Patient and provider engagement and support (secondary)
Target population	<ul style="list-style-type: none"> Medicaid, Medicare, and dually eligible patients who are at high risk for a major adverse cardiovascular event—defined as a heart attack, stroke, or sudden death due to cardiovascular complications
Theory of change/theory of action	<ul style="list-style-type: none"> Providing patients with a health coach and appropriate evidence-based medication therapy will reduce the incidence of cardiovascular events, improve survival rates, and reduce overall health care costs.
Payment model	<ul style="list-style-type: none"> Value-based purchasing, fee-for-service
Award amount	<ul style="list-style-type: none"> \$5,820,416
Launch date ^a	<ul style="list-style-type: none"> January 19, 2015 (as defined by UCSD)
Setting	<ul style="list-style-type: none"> Provider based (primary care physicians)
Market area	<ul style="list-style-type: none"> Urban, suburban
Market location	<ul style="list-style-type: none"> San Diego County
Core outcomes	<ul style="list-style-type: none"> Percentage of enrolled participants who died Experience of participants with physicians and physician office staff (using the Clinician and Group Consumer Assessment of Healthcare Providers and Systems survey) Total Medicare Part A and B cost calculations Decrease in the emergency department (ED) visit rate Decrease in the incidence of major adverse cardiac events Increase in the percentage of participants adhering to medications

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by the awardee to the implementation and monitoring contractor that cover the first year of the award (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and during our site visit to the University of California at San Diego from September 1 through September 4, 2015, as well as from follow-up telephone discussions held in November 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed program leaders at the University of California at San Diego as well as frontline and administrative staff. We conducted follow-up telephone interviews in situations where key staff were unable to meet with us during the scheduled site visit. We visited the University of California at San Diego as the convening organization and spoke with awardee leaders, key implementation staff, and IT staff. We also visited North Coast Family Medical Group, Vista Community Clinic, and Neighborhood HealthCare. North Coast Family Medical Group is a smaller, more traditional doctor's office; Vista Community Clinic and Neighborhood HealthCare are larger community clinics. In addition, we held follow-up telephone discussions with Sharp Rees Stealy because the staff there were not available to meet with us during our scheduled site visit. We also felt that it was important to include Sharp Rees Stealy's perspective because it is a large, for-profit health care organization with a central care management system. In addition, Sharp Rees Stealy has significant prior experience with the health coach model, whereas the North Coast Family Medical Group and Vista Community Clinic have less experience with health coaching. (For example, North Coast Family Medical Group is implementing health coaching for the first time.)

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed them. A team member received training; achieved interrater reliability on coding; and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this report on the awardee's implementation experience.

C. Findings

1. How effectively has the program been implemented?

Despite initial challenges, implementation of the HSF-Z program went reasonably smoothly during the first year. The University of California at San Diego has a strong

"We had tried other things before [to get the program going], too. I had sent [providers] the video . . . articles . . . reprinted PowerPoint presentations . . . and it wasn't helping. So, I think having [University of California at San Diego] leaders come in . . . helped a lot. "

—Health coach

leadership team that helped facilitate implementation of the program. Leaders have been effective in gaining buy-in from other physicians at the medical groups to participate in the program. In addition, the University of California at San Diego leadership team has regularly scheduled meetings with the eight medical groups to discuss any challenges and to brainstorm solutions to keep the

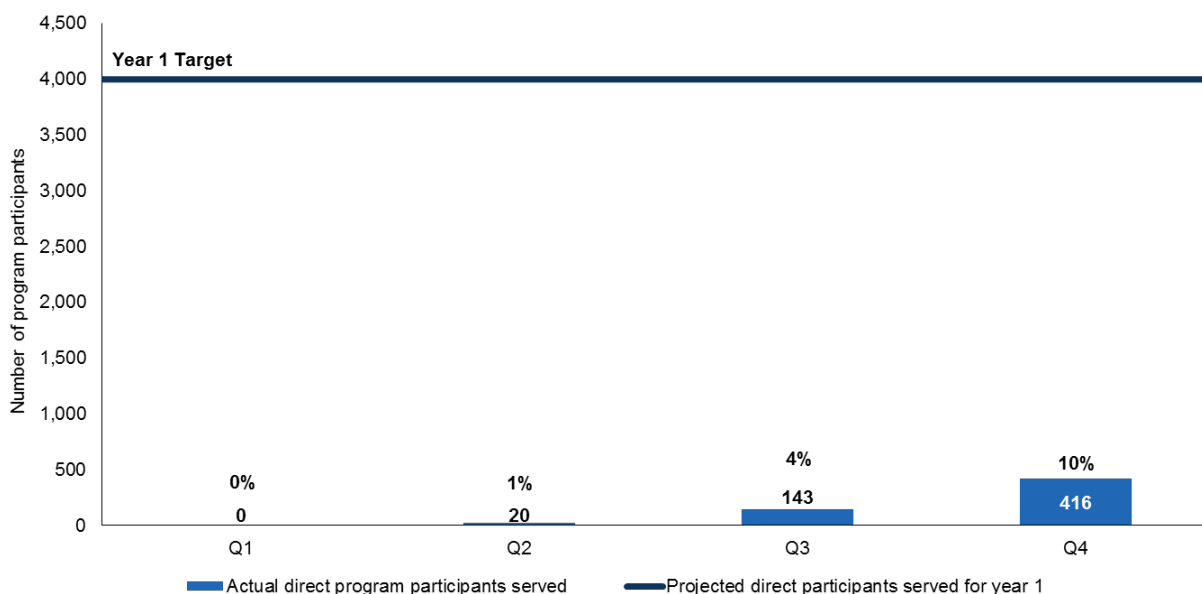
program moving forward. The team also has met with many of the medical groups in person to educate providers and other staff about the program. Frontline staff we spoke with stated that this was an important step in ensuring physician buy-in and launching the program.

The program design has changed slightly since the cooperative agreement was awarded. Leaders from the University of California at San Diego made a few changes to the criteria for inclusion or exclusion related to the medication bundle—most on an ongoing, patient-

by-patient basis, as needed. In addition, medical groups have implemented their own changes relating to recruitment and enrollment (see Question 2 below for more detail).

The program implementation was delayed from the original timeline. Enrollment did not begin until six months into the cooperative agreement—two months behind the date specified in the awardee’s plan (Figure 1). The University of California at San Diego noted that it originally proposed an enrollment period of six months, but before the cooperative agreement was awarded, CMMI asked the university to change the planned time frame for enrollment to four months. The awardee stated that it had delays in obtaining institutional review board (IRB) approval, which, in turn, delayed the eight participating medical groups in reaching their target enrollment goals. The awardee also stated that it was not surprised about the delays from the IRB, given the nature of the program.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded through the HCIA R2 cooperative agreement from program launch through the fourth program quarter. The University of California at San Diego does not have indirect program participants.

The program is reaching a small portion of the target population. The medical groups are facing challenges with recruitment and enrollment, with many in the target population declining to participate for various reasons. The project team had assumed that offering a free program that could benefit patient health would be enough of an incentive for participants to enroll in the program. The project team is discovering this is not the case. Cultural differences in the population have been one factor affecting enrollment. Some groups have a large low-income Hispanic population that may view health coaches as more of an intrusion than a helpful resource. A health coach at one of the medical groups also stated that this population often does not consider health care to be a high priority. In trying to enroll and build relationships with potential participants in order to educate them about the importance of making health a priority, other health coaches stated that language barriers have been a challenge. Several of the medical groups we spoke with have Spanish-speaking health coaches to help address this barrier. However, one health coach stated that even though she is fluent in Spanish, there are many different dialects, which can make it difficult to help some patients.

“One of the things that I learned—and it was a little discouraging to me—was a high number of people that said no. We offered [the study] to them as a free program to improve their health, and they said no.”

—Participating provider

Some of the groups’ eligible patients are also of low socioeconomic status. These patients are, in some cases, homeless or may have transportation issues, so they are not able to easily participate in in-person follow-up visits. One medical group we spoke with is offering follow-up appointments by telephone or providing in-home visits, which the health coaches have stated has worked well in retaining patients in the study. Other potentially eligible patients have co-occurring disorders such as drug addiction, advanced kidney disease, or cancer that have taken priority over participating in the study.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

a. Primary component: care management through health coaches

Although all medical groups employ health coaches to support patients and provide care management, the health coaches’ roles and responsibilities vary across the groups. Health coaches’ salaries are paid through HCIA R2 funds; most of the participating medical groups employ full-time health coaches to implement HSF-Z. However, some coaches at some of the medical groups have other job roles and responsibilities. The coaches also vary in experience and background (for example, some are registered nurses, while others are not). Some medical groups are implementing HSF-Z at a single location, so participants (that is, patients who have agreed to participate) must go to that location to meet with the health coach even if it is not where the participant usually goes for medical care. Other medical groups are working with participants at several locations. In some cases, health coaches may visit these locations to meet with participants. In other cases, health coaches work remotely and provide telephone follow-ups. One health coach we spoke with provides in-person home visits to high-acuity patients enrolled in the study.

Despite recruitment and enrollment barriers, health coaches whose primary role and responsibility is the HSF-Z program have been, for the most part, successful in finding alternative strategies to overcome the challenges. These health coaches reported having time to attend brainstorming meetings and work through different strategies to increase enrollment, as well as to establish and maintain relationships with enrolled participants. One administrator at a medical group stated that he originally thought the health coaches would be able to enroll patients in an intake session lasting about 30 minutes and then follow up with two 15-minute appointments. However, the medical group has found that much more time is needed with patients—with the initial session lasting roughly an hour and each follow-up session lasting 45 minutes. The medical group also increased follow-up appointments from two visits to five visits. On the other hand, the medical group having the most difficulties with recruitment and enrollment originally had a team of 10 health coaches, each dedicating 10 percent of their time to the program. This strategy did not engender any enthusiasm within the practice for the program. In addition, because different people were contacting patients, the health coaches were not able to form stable, trusted relationships with study participants. This medical group has since modified its approach by hiring a new part-time staff person dedicated solely to recruitment. The group is also planning to decrease the number of health coaches working on the study (still to be determined). The retained health coaches will also focus solely on implementation of the program.

Physician champions at each medical group have helped to gain the cooperation of other medical staff. By educating and providing ongoing awareness of the study to other physicians and staff, these physician champions are increasing the number of medical staff who are on board with the program and will help recruit potential patients. For example, if the physician believes the patient is a good candidate for the study, he or she will often refer the patient to the health coach for enrollment. This has been an effective recruitment strategy at some of the participating medical groups because often the eligible participant will be in the office for another type of appointment and the health coach will have better success discussing the study with the patient in person rather than over the phone.

Because medical groups have had a harder time with enrollment than expected, some groups have begun utilizing other recruitment strategies. The first recruitment strategy for several of the medical groups we spoke with was to generate a list of all eligible patients from medical records and “cold call” potential participants. Because this yielded low enrollment numbers, these medical groups have since switched to other strategies. As discussed above, several health coaches have started working with physician champions or other practicing physicians to recruit patients as they come into the medical practice, often for other types of appointments. In some cases, health coaches have also started reviewing charts for patients who have scheduled appointments for the following week in order to flag those who might be a good fit for the study. The health coaches then speak to the patients during or after their appointments.

“We have become much more successful at recruitment. We expect this [change in strategies] to snowball as we move on with the program.”

—Provider champion

Other recruitment strategies have included distributing flyers in provider offices to advertise the study and opening up enrollment to other locations.

Health coaches stated that the guidance around the medication bundle has made it challenging to recruit and enroll patients. Frontline staff noted that the medication bundle does not always take into account the unique circumstances of the patients. For example, a patient may start the medication bundle, but then the physician determines that one of the medications is not correct for the patient due to an allergic reaction. In cases such as these, staff are unclear whether the patient can continue to be enrolled in the study. It appears that many of these types of caveats with the medication bundle are still being decided by program leaders, although they have been very responsive in helping health coaches make decisions on an individual basis as needed.

b. Secondary component: patient and provider engagement

Secondary program components include both patient and provider engagement and support. Some patients will receive a wireless blood pressure cuff and education from the health coach on the importance of self-monitoring blood pressure. The blood pressure cuff will feature automatic uploads of data to keep primary care team members informed of the patient's condition. The University of California at San Diego is currently evaluating technology platforms for the blood pressure cuff, and its IT staff plans to pilot the cuff in Year 2 of the program with a small sample of participants in some medical groups.

The awardee stated that one of the goals of the wireless cuff pilot is to see how quickly patients using the cuff get their blood pressure under control compared to the comparison group. The awardee also hopes that using the cuff will improve the provider-patient relationship. Some medical groups have expressed apprehension about using the cuff because of low literacy levels among their patient populations. However, several medical groups are already implementing some type of cuff using non-HCIA R2 funds. For example, the Scripps Foundation is using a wrist blood pressure cuff that is not wireless, while Sharp Rees Stealy is using a wireless cuff. Sharp Rees Stealy has a health coach who is making home visits to follow up with patients who are using the cuff. Unfortunately, staff at the University of California at San Diego stated that they are not able to get to the data from these cuffs. However, some frontline staff who have started using the cuffs independently of the study told us that it has helped to support the health coaches' educational efforts and improved patient compliance. One health coach spoke of a patient who thought he was being compliant but realized after he started monitoring his blood pressure each day with the cuff that he often was forgetting to take his daily medications. The health coach said that the cuff has helped him as well as other patients make "real time" connections about blood pressure symptoms and medication faster than she was able to through other educational efforts. As the pilot rolls out in Year 2, we will follow up with program leaders at the University of California at San Diego about the implementation of the blood pressure cuffs and the ability to monitor their use.

A broader educational outreach effort to the entire San Diego area is also planned through the “Be There San Diego” campaign. The goal of the campaign is to provide educational outreach to San Diego residents in order to encourage them to take action to address the risk factors for heart attacks and strokes and to get their physicians to aggressively reduce these risk factors using the medication bundle. The University of California at San Diego leadership team held the first annual summit in August 2015 to reaffirm the “Be There” message to stakeholders in San Diego County. The summit included several presentations by the principal investigator at the University of California at San Diego and the executive director of the Million Hearts initiative in San Diego among others. The university is tying this campaign to other projects, including a Centers for Disease Control and Prevention research grant with a faith-based component, to help get the message out into the community, which should, in turn, help with recruitment and enrollment for the HSF-Z program. University of California at San Diego leaders stated that achieving synergy with other similar initiatives has helped with rolling out pieces of the “Be There” project. Due to limited funding, however, the awardee currently has no plans to roll out the larger “Be There” project as initially envisioned. This will also be something we will want to follow up on with awardee leaders in Year 2.

Last, ongoing provider education is presented through the UBP, a monthly education forum for medical directors from San Diego–area medical groups. Through the UBP, medical leaders began developing the guidelines for the medicine bundle used in the HSF-Z program, which helped to pave the way for these leaders to buy into the program. By including forums about the HSF-Z program in the UBP, University of California at San Diego leaders said that providers who were affiliated with the UBP came to support the goals of the study. Some of these providers were instrumental in getting their medical groups to join the study and have been the physician champions at participating medical practices. Having UBP forums dedicated to discussing the HCIA grant in order to continue to increase physician buy-in is a continuing goal of the study in the upcoming year.

3. How do the awardee and implementing sites make decisions about program-related changes?

Leaders at the University of California at San Diego are making program-related changes based on feedback they are receiving from participating medical groups. For example, frontline staff stated that trying to educate their providers about the program and increase their awareness of it was difficult; they felt their physicians would be more likely to be interested in the program if they heard about it from a peer. As a result, awardee leaders visited several of the medical groups and presented information about the HSF-Z program and the scientific evidence behind the medication bundle. Leaders from the University of California at San Diego and frontline staff stated that this has been effective in gaining physician buy-in and improving enrollment. Awardee leaders are now giving this presentation to other medical groups. In addition, the awardee is also reconsidering the age criteria for enrollment based on questions from the teams about the lower age limit for the project. Some medical groups report having patients under the age of 50 who are at high risk for a heart attack or stroke based on the risk calculator, but who do not meet the age criteria.

Leaders at the University of California at San Diego are making ongoing program-related changes through program data collected through the Research Electronic Data Capture (REDCap) system. The awardee's IT staff have established a standardized process for medical groups to report program data using the REDCap. Medical groups use this system to capture all details required by the Centers for Medicare & Medicaid Services (CMS) that are related to program implementation and progress—including patient enrollment and disenrollment, medication adherence, and a patient activation measure. Specifically, health coaches use an enrollment form and a baseline encounter form in REDCap to capture data such as prescriptions and clinical measures. They use encounter forms to capture data on medication adherence and physician referrals as well as outstanding questions to work through with the patients.

To avoid having multiple data entry for staff, several groups have chosen to collect this information in their electronic medical records and then send regular data uploads to the University of California at San Diego for import into REDCap. Awardee leaders stated that they are trying to reduce burden on the medical groups as much as possible, so they have been very responsive to requests from each group for assistance in how to determine the best way to capture the data. The University of California at San Diego's IT staff stated that the REDCap is a "very flexible" system. In addition, there have been several iterations of REDCap, as the system is seen as an ongoing process of this formative research study.

The University of California at San Diego has two health services researchers working on the measure development for internal research design and evaluation issues. The goal is to ensure that all aspects of the design and how they are implemented make sense as well as to identify what type of data is needed for the impact evaluation. Along with program leaders, the health researchers on the data and evaluation team also make decisions about what changes or additional data are needed to be collected by the groups. Awardee leaders stated that, although they have not omitted any measures originally proposed, they have added several new measures and will continue to do so as needed. For instance, they are now tracking patient refusals and exclusions in order to better understand patient flow.

Several medical groups are also collecting self-monitoring data for use in their individual quality improvement efforts. One administrator at a participating medical group hopes to use data from the program to demonstrate cost savings (in terms of reduced readmissions) to a local hospital. The administrator stated that 40 percent of readmissions to hospitals for these conditions are because of too much, too little, or noncompliant medication use. Because hospitals are not being reimbursed for secondary readmissions for the same diagnosis, many are actively looking to prevent readmissions. This administrator hopes that by showing cost savings data from the medication therapy management services currently provided under the program, the medical group can negotiate this type of service as a billable service. Another medical group is using data reports from its registry to track potential areas for improvement in the program. This medical group also holds monthly leadership meetings in which the data are reviewed.

Frontline staff report that participants view the program favorably. Frontline staff said

“Patients are wanting to stay in the program even after they achieve blood pressure control. . . There was even a patient recruited [whose] wife wanted to be in the program as well, and requested to be in it.”

— *Health coach*

anecdotally that participants enjoy being part of the program—they especially appreciate the opportunity to get more personalized attention and support in meeting their health care goals. Several medical groups noted that it is too early to conduct any formal type of patient survey because they are “still trying to maintain strides in enrollment.”

However, a couple of groups discussed plans to conduct a patient survey to obtain more formal feedback in the future.

4. To what extent has the awardee begun to plan for or implement payment reforms?

The University of California at San Diego proposes a population health payment model based on a new type of entity called the Accountable Health Community (AHC). This new category of provider involves a broad coalition of stakeholders, including the following:

- An AHC “integrator” entity (the University of California at San Diego through the “Be There San Diego” initiative)
- Community-based organizations
- Health care organizations: medical groups and independent physician associations
- Patients
- Payers: commercial, state Medicaid, CMS, self-insured employers, the County of San Diego, and the U.S. Department of Health and Human Services
- The California Public Health Department

The goal of this payment reform is to build a broad coalition-based movement to expand on improving value in the health care system. The awardee hopes to have stakeholders invest in this type of organization so that it can create initiatives, pick target goals and outcomes, and move the groups toward these goals at a regional level (for example, decreasing heart attack and strokes in San Diego County). Because San Diego has many different health systems that compete with each other for patients, project leaders at the University of California at San Diego are adopting a phased approach. In the first phase, they plan to continue to work on gaining buy-in from San Diego County health care organizations and payers. To achieve this, they are building on existing contacts and relationships, as well as creating new relationships with the staff of various payer groups and health care organizations. Their aim is to build trust and move toward consensus by showing that this type of payment reform can improve outcomes. Once they are able to forge an agreement with these two groups for this type of payment reform, they plan to form a payment reform governance committee. Awardee leaders stressed that it was not appropriate to form such a committee until enough feedback and trust were in place so that these groups would not feel that the committee was formed “out of the blue” without their input.

D. Impact evaluability assessment

The impact evaluation for HSF-Z will use claims data and a difference-in-differences design. The proposed design was selected because it was feasible and generally suffers from fewer threats from validity than alternative quasi-experimental designs. As this is an intent-to-treat evaluation, incomplete data on treatment group members, specifically those who refused enrollment in the program and those eligible but not recruited, present a challenge to impact evaluation design. To deal with these data limitations, we plan to define the treatment and comparison groups using an instrumental variable (propensity score) approach, which, if successful, will address the data limitations as well as deal with potential bias from patient self-selection. We will utilize multiple comparison groups consisting of patients at risk of stroke or heart attack taken from other medical practices in San Diego as well as a comparison metropolitan area in California to assess the impact of the community-wide educational efforts of the “Be There” intervention as distinct from the more focused HSF-Z intervention.

The impact evaluation faces some severe sample size and effect size challenges. These stem from the possibility of lower-than-expected enrollment into the intervention, but more importantly, delays in obtaining claims data (especially Medicaid claims) may require that we not use all three years of intervention period observations. Moreover, we will require prescription drug claims, so we may lose as much as three-quarters of Medicare patients who are not enrolled in Part D prescription drug plans. There are other uncertainties regarding the availability and quality of Medicare Advantage encounter data.

The delays in obtaining claims data mean that the cut-off date for performing an impact evaluation is likely to precede the full three-year HCIA implementation period. The key impacts of this intervention—reduced incidence of major cardiovascular events—were expected to be relatively small during the full three-year period. Without sufficient statistical power, our ability to detect these small impacts is questionable. Reductions in the average time participants will be observed for the impact evaluation, stemming from both the slow initial pace of recruitment after the program’s start date as well as early cut-off dates resulting from the delays in claims, will increase the likelihood that the evaluation will lack sufficient statistical power to observe expected impacts. As a result of these uncertainties, we recommended that a final decision regarding evaluability be postponed until we gain additional information on some of these data issues.

E. Next steps

We look forward to continuing to work with the University of California at San Diego for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit

consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include attempting to identify alternative sources of Medicaid claims and encounter data that might be available sooner than alpha-Max. Once we begin to receive participants' identifying information from the University of California at San Diego, we will begin to describe treatment group baseline characteristics (except for prescription drug use) for Medicare FFS beneficiaries by using claims data. Part D information will not be available until 2017. At that time, we will begin to develop methods for constructing our treatment and comparison groups by using propensity score modeling.

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APPENDIX B.30

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA AT SAN FRANCISCO

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REPORT

APPENDIX B.30

HCIA Round Two Evaluation: The Regents of the University of California at San Francisco

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FINDINGS AT A GLANCE (September 1, 2014 – November 19, 2015)

Successes

- The flexibility of the program design and the collaborative nature of the awardee's team have helped the awardee work towards program goals. There is a high level of collaboration between care team members both within and between the implementation sites. Staff also describe the program as being "agile," and as a result, they have been able to overcome several challenges, improve the workflow, and move closer to program goals.
- Training and regular care team debriefings provide care team navigators (CTNs) with resources to establish trust with participants and to identify their most important needs. The CTNs have received extensive and ongoing training in various areas (including motivational interviewing) to help them interact with participants. At the same time, the team debriefings provide an opportunity to discuss challenging cases or issues and to provide guidance and feedback to CTNs.

Challenges and strategies to address them

- Recruitment has been more difficult than anticipated. Some initial recruitment strategies that program leaders thought might yield many referrals have produced only very modest results. Staff have therefore begun to use other strategies, including maximizing media coverage and outreach at local health and wellness events. Program staff were also surprised at how time-consuming recruitment efforts have been, so program leaders have hired additional staff to deal with this issue.
- Engaging primary care providers outside of The Regents of the University of California at San Francisco and the University of Nebraska Medical Center network has been challenging. Providers outside the awardee's hospital systems are less aware of the study, and program staff who contact them about their patients enrolled in the study have found it difficult to engage them. The staff have attempted to contact them in many ways (such as by fax, email, and phone), trying to customize the most efficient route to each provider. Program leaders are also directly contacting some providers.

Lessons learned

- Recruitment efforts that program leaders thought would yield many referrals have been unsuccessful, so program leaders have come to realize that it is important to have several different strategies in place.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 30, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round 2 of Health Care Innovation Awards (HCIA) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected awardees whose goals are to: (1) reduce Medicare, Medicaid, and

Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of Round Two of HCIA, or HCIA R2, programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Dementia Care Ecosystem program, which is being implemented by The Regents of the University of California at San Francisco. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the University of California at San Francisco's Dementia Care Ecosystem program, including initial implementation experiences, initial challenges to and successes with enrollment, and participation and engagement with stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to the University of California at San Francisco and to the University of Nebraska Medical Center, and from review of the University of California at San Francisco's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the University of California at San Francisco's program, this report addresses four questions:

1. How effectively has the program been implemented?

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the University of California at San Francisco's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The University of California at San Francisco received an HCIA R2 award to implement the Dementia Care Ecosystem program. The program aims to improve patient and family satisfaction with dementia care, prevent emergency-related health care costs, and keep patients in the community longer. The program is a joint partnership between the University of California at San Francisco and the University of Nebraska Medical Center. Each site is enrolling a diverse sample of patients—from urban areas (San Francisco, California, and Omaha, Nebraska) and from suburban and rural areas (in Nebraska and Iowa)—with mild to advanced dementia. The program launch date, as defined by the University of California at San Francisco, was March 31, 2015, which was seven months after the Centers for Medicare & Medicaid Services (CMS) official start date.

The University of California at San Francisco's theory of change (TOC) and theory of action (TOA) is that providing care team navigation services via telephone will improve patient quality of life, improve caregiver satisfaction with dementia care, reduce total costs of care, delay time to nursing home placement, and reduce caregiver burden. The program will lower costs of care by reducing health care utilization, including emergency department (ED) visits, hospitalizations, prescription drug use, ambulance use, and nursing home or skilled nursing use.

The target population is individuals age 45 and older with dementia and their caregivers. The Dementia Care Ecosystem program targets patients with dementia at any stage (mild, moderate, or advanced), regardless of dementia type. The program staff also identifies a primary family caregiver, who is also required to be involved. Caregivers must be 18 years or older and hold primary responsibility for the dementia patient. Permanent residents of nursing homes are excluded from participating. The program leaders plan to recruit 2,100 participant dyads (1,400 for the treatment group and 700 for the control group); 1,200 are to be recruited in California and 900 in Nebraska and Iowa.

1. Primary component

Patient navigator/health coach. Following enrollment, patients are randomized to a treatment or control group. Members of the treatment group are assigned to a care team navigator (CTN) who oversees their care by telephone, linking them with any needed resources, and triaging questions about medical decision making to appropriate members of the program team.

CTNs also facilitate communication with the patients' primary care providers (PCPs) by telephone and help patients who do not have a PCP to obtain one. A CTN and a backup medical provider were originally intended to be available 24 hours a day, seven days a week to help participants with urgent issues, but this is no longer the case. Program leaders decided not to provide this service as originally proposed because of liability concerns (such as urgent situations in which it is more appropriate for a patient to call to his or her provider directly or to be treated in the ED).

Members of the control group receive care as usual, with the addition of linkages to community resources from the research coordinator (RC) by phone. The awardee has taken steps to address the potential challenges of maintaining participation of members of the control group:

1. Before randomization, staff ensure that the details of the program are clearly outlined to participants; only individuals who consent to being randomized in either study arm (treatment or control) are included in the study.
2. To motivate individuals to participate in the program, program staff emphasize the value of the control group to dementia research at enrollment and during follow-up assessments with participants every six months.
3. The awardee is doing everything possible to reduce the burden on control group members, for example by keeping assessments as short as possible.
4. RCs link patients and families with dementia resources in their communities; such services are offered to both study arms. Program leaders also continue to brainstorm about other ways to prevent attrition in the control group, such as providing payments for completing the surveys. RCs also hold weekly meetings to review eligibility and recruitment to continuously improve processes.

2. Secondary components

Care coordination. The Dementia Care Ecosystem clinical team—consisting of a nurse, a pharmacist, and a social worker—train, supervise, and provide expert advice to CTNs. The CTNs involve members of the clinical team in the patient's care whenever needed. The clinical team intervenes when specialized attention or guidance for medical decision making is needed. Members of the clinical team also refer patients to community resources or to physical and occupational therapists when appropriate. Although initial recruitment into the program is sometimes done in person when the patient is in the participating medical center, all care coordination is done via telephone.

Decision-making tools. The program is intended to facilitate proactive medical, financial, and safety decision making for patients and caregivers. Upon a participant's entry into the program—and at regular intervals—a CTN schedules a phone conversation to help evaluate medical and financial planning needs and update relevant medical decision-making documents, such as a goals of care worksheet and a durable power of attorney for health care. CTNs make referrals to community legal services when appropriate. Patients and caregivers also receive

education on palliative approaches to advanced dementia and strategies to monitor finances and prevent fraud. CTNs discuss issues relating to personal safety, such as concerns about driving or any that might pertain to the home environment. They assess safety risks and offer guidance to protect against these risks. With more advanced dementia stages, they help assess concerns about the caregiver's ability to safely manage the patient in the home, evaluate whether the patient's current care is consistent with stated goals of care, and anticipate future medical decisions in light of the patient's goals. Parts of this module are currently being implemented; other scripted protocols for the CTNs to collect this information are still in draft form.

Medication management and adherence. Program staff provide comprehensive education and medication-management support for patients, caregivers, and providers. All patients receive a medication review by a pharmacist at enrollment. Medication reviews can also be triggered at the request of a clinician or CTN or by an automated alert from the technology dashboard monitoring system program staff use. This medication management targets adverse events and high-risk or inappropriate medications. Using the dashboard, Dementia Care Ecosystem pharmacists review patients' medications and screen for medication-related problems, such as adverse drug events and patient non-adherence. They also educate patients, caregivers, and health care providers about safe and effective use of medications. Finally, the pharmacists work to decrease costs when possible by recommending generic drugs or interventions that do not involve drugs, or by providing patients with information about drug assistance programs.

Patient and family education. Education and support resources are targeted to the patient's needs and stage of dementia. During calls with patients and caregivers, the CTN provides contact information for resources that can assist with legal, financial, and medical planning, as well as with dementia care delivery for caregivers. The pharmacist staff educate patients and caregivers about safe and effective use of medications. The Dementia Care Ecosystem program will also offer Internet-based dementia education via webinars and videos on the dashboard tool. For caregivers, the program staff focus on building self-efficacy and skills, including providing linkages to financial resources, caregiver health tools, and identifying community resources.

Health information technology (health IT). Program staff make use of a stand-alone application (the dashboard) that features modules on (1) caregiver support and education, (2) decision-making support, (3) medication support and education, and (4) functional monitoring. The caregiver module connects families with community resources; the decision-making module facilitates proactive medical, financial, and safety decisions. The medication module tracks and reduces inappropriate medications or doses and triggers a pharmacist review. Finally, the functional monitoring module, which is being designed, will involve the use of smartphones and sensors in participants' homes to rapidly detect and respond to changes in functional status. A patient portal that links to the dashboard is in development.

The University of California at San Francisco hypothesizes that giving patients and caregivers personalized preventive care telephonically, supported by innovative technology, should reduce the incidence of medical emergencies, prevent unnecessary ED and hospital use, and delay the time to nursing home placement. The University of California at San Francisco

believes that these should result in overall cost savings to health care systems, as well as improved quality of life for patients and families.

Other key characteristics of the University of California at San Francisco's program are described in Table 1.

Table 1. University of California at San Francisco: Dementia Care Ecosystem characteristics at a glance

Program characteristic	Awardee
Purpose	The goal of the program is to improve patient quality of life, improve caregiver satisfaction with dementia care, reduce the total costs of care, delay time to nursing home placement, and reduce caregiver burden.
Components	<ul style="list-style-type: none"> • Patient navigator or health coach (primary): CTNs will telephonically oversee care, link patients with resources, and triage complex issues to appropriate professionals. • Care coordination (secondary): The clinical team will train, supervise, and provide expert advice to CTNs, and intervene when specialized attention or guidance for medical decision making is needed; clinical teams consist of a nurse, a pharmacist, and a social worker. • Medication management and adherence (secondary): Through the dashboard, all patients receive a medication review by a pharmacist at enrollment. Medication reviews can also be triggered at the request of a clinician or CTN or by an automated alert from the technology dashboard monitoring system used by program staff. • Patient and family education (secondary): Education and support resources are targeted to the patient's needs and stage of dementia. Resources include legal, financial, and medical planning, as well as dementia care delivery for caregivers. • Health IT (secondary): The dashboard clinical workflow management tool consists of (1) caregiver module, (2) medication module, (3) decision-making module, and (4) functional monitoring (in design phase); the dashboard also includes scheduling and data collection tools. A patient portal is being developed.
Target population	Patients ages 45 and older with a diagnosis of dementia and their caregivers Includes underserved populations
Theory of Change/ Theory of Action	The University of California at San Francisco hypothesizes that giving patients and caregivers personalized preventive care telephonically, supported by innovative technology, should reduce the incidence of medical emergencies, prevent unnecessary ED and hospital use, and delay the time to nursing home placement. The awardee believes these should result in overall cost savings to health care systems and improved quality of life for patients and families.
Payment model	Fee-for-service, value-based purchasing, per capita care management payment
Award amount	\$9,990,848
Launch date ^a	3/31/2015
Setting	By telephone (These telephone calls usually take place in the patient's home, but in some cases, other settings are involved. For example, a caregiver who works full time may ask to speak with the CTN during a lunch break.)
Market area	Rural, urban, and suburban
Market location	California, Iowa, Nebraska

Program characteristic	Awardee
Core outcomes	<ul style="list-style-type: none"> • Improved caregiver perception of patient's quality of life • Heightened caregiver satisfaction with module services • A reduction in caregiver burden • A reduction in caregiver depression • A decrease in the following: <ul style="list-style-type: none"> – ED visit rate and costs – hospitalization costs – ambulance utilization and costs – nursing facility costs – prescription drug costs – use of high-risk medications and other potentially inappropriate medications – percentage of patients with an adverse drug event

^a After a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by the awardee to the implementation and monitoring contractor covering the first year of the award (September 2014 to August 2015), and (3) qualitative data gathered during initial telephone discussions with the awardee and our site visits to the University of California at San Francisco Dementia Care Ecosystem on September 24 and 25, 2015 and to the University of Nebraska Medical Center on October 29 and 30, 2015, as well as from a follow-up telephone discussion held in November 2015. For our document review, we used a standardized document review tool to abstract key data from the application, first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed program leaders at the University of California at San Francisco and the University of Nebraska Medical Center, frontline staff, administrative staff, and other stakeholders at recruitment sites. We visited the University of California at San Francisco Memory and Aging Clinic (MAC) as well as San Francisco General Hospital in San Francisco, California, and the Home Instead (a for-profit in-home and community-based service organization for seniors) headquarters in Omaha, Nebraska.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this report on the University of California at San Francisco's implementation experience.

C. Findings

1. How effectively has the program been implemented?

The program design has continued to evolve since inception, which has allowed for successful implementation during Year 1. The University of California at San Francisco designed the Dementia Care Ecosystem to be “agile.” The University of California at San Francisco co-opted this term from its development of the program’s dashboard tool and now uses it to describe the efforts of program leaders to be flexible in making changes in response to feedback from program staff (see Section 3 for more detail).

“We think of ourselves as an agile study, where we’re continuing to enhance our intervention throughout the three years. We keep adding more and more resources for our caregivers, for example, built into the program and enhancing our technology as we learn how to do so from our experience.”

— Program leader

Although many parts of the broader research design remain largely unchanged, elements of the program itself continue to be refined. Program leaders believe this is necessary to ensure that the intervention continues to be effective and that the study meets its goals. For example, the implementation sites changed their engagement strategy for the control group and continue to refine this approach to maximize participant retention (see Section 2 for more detail). In addition, the participant enrollment approach has been refined because it yielded fewer enrollees than expected. Program leaders also decided, because of liability concerns, not to provide 24/7 services as originally proposed.

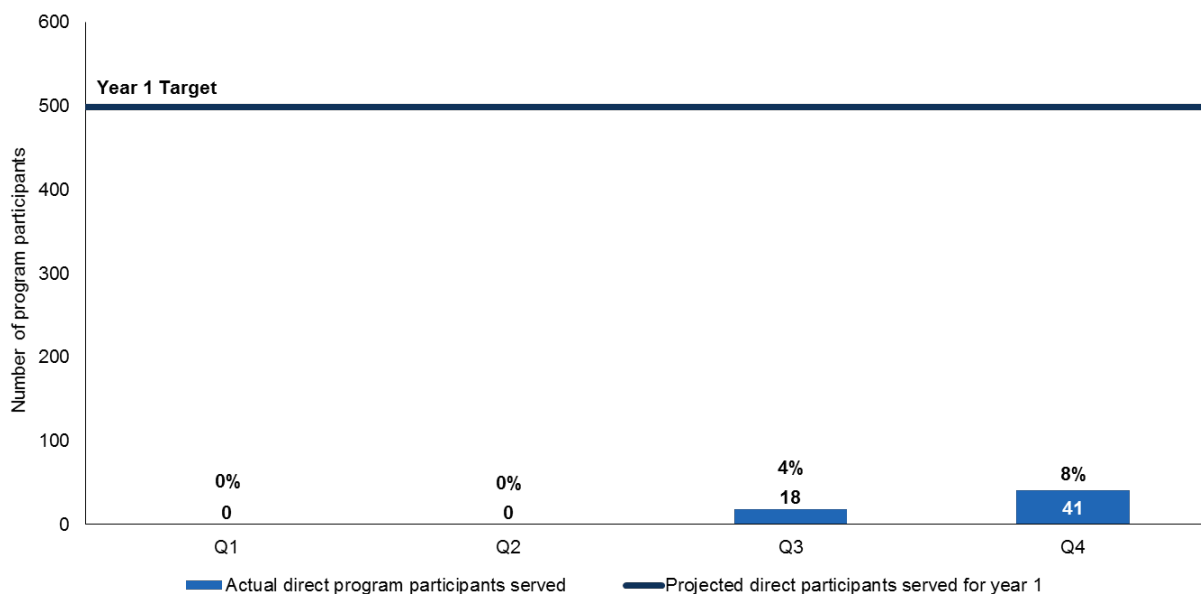
The vast majority of the changes have occurred in the dashboard that is used to collect and track program data. Using the agile methodology, IT staff have weekly “scrum” meetings to discuss and prioritize what parts of the dashboard to revise next (for example, in the meetings, they use flashcards to estimate level of effort as part of their determination). In addition to modifications in the user interface and fields in the dashboard, program leaders have made changes to the care management workflow, the order in which modules are presented to participants, and in the scripts used by the CTNs and RCs.

Program leaders acknowledged several drawbacks—from a research perspective—to the agile approach. Changes to the study protocols and research design must be submitted to the institutional review board (IRB) for approval. This can be a lengthy and time-consuming process. Furthermore, the continuous program modifications can pose a challenge to accurately measuring the impact of the program and also impact staff training. The program leaders believe the refinements are necessary for creating a model that can be sustained and scaled after the cooperative agreement ends. However, they expect to make fewer changes to the intervention approach as more components are established.

In general, the program is reaching its intended target population of caregivers and patients with dementia, although some subpopulations they hope to include have not enrolled. Figure 1 below displays the projected and actual direct participants served for the program by quarter. The projected direct participants served for year one was 499; however the

actual direct participants served was 59. The University of California at San Francisco began serving participants in quarter 3 (with 18 being served in quarter 3 and 41 in quarter 4). So far, most patients have been enrolled from the University of California at San Francisco and the University of Nebraska Medical Center's health system or by self-referrals. However, the awardee is still in the early stage of recruitment, and enrollment efforts for the Chinese- and Spanish-speaking populations are ramping up. The University of California at San Francisco has just hired staff fluent in these languages to start outreach efforts and they are working on translating the necessary documents, including the consent forms and the protocols. The University of Nebraska Medical Center is still working on strategies to increase recruitment and enrollment with its more rural population, especially in Iowa. Program staff have begun work on a media campaign targeting this area.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through quarter four. The Regents of the University of California at San Francisco does not have indirect program participants.

Delays in the original timeline have delayed program implementation. Program leaders stated that because the study is agile they regularly must present additional items for IRB approval. For example, the team regularly develops additional and revised protocols for the RCs to use during surveys with caregivers and patients to collect information. As new sets of questions are included, additional rounds of IRB approval slows the RCs' ability to use them. In addition, because staff want to recruit non-English-speaking populations, there have been more

delays after IRB approval in recruiting and enrolling this population because of the need to translate the materials. A third reason for delays in the original timeline is because some of the necessary staff is still being hired. The University of California at San Francisco stated that one of its provider champions has sent a list of approximately 100 patients who are interested in or may qualify for the study. However, because the current RCs have full loads, they will not begin recruiting from this list until additional RCs and CTNs are hired.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

The various components of the Dementia Care Ecosystem are closely linked. Although we are distinguishing between these components for evaluation purposes, the program staff consider them part of an integrated program. As a result, the key program facilitators and barriers that we discuss below apply to multiple components.

The flexible and collaborative nature of the project design and staff supports achievement of program goals.

“Pretty much every day the nurses, nurse practitioner, project coordinators, they’re asking for our opinion. They’re asking us what works, what doesn’t. They really value what we think because we are such an integral part.”

— *Care team navigator*

members both within and between the implementation sites. The University of California at San Francisco and the University of Nebraska Medical Center hold joint weekly debriefing meetings with the teams where concerns and challenges can be identified and addressed. This regular communication has also helped to maintain

a programmatic consistency between the two sites. In addition, program staff reported that program leaders are open to suggestions from the care team and regularly solicit their input. Input from all members of the team, including frontline staff, is seen as essential and has resulted in modifications to the program.

Structuring the intervention around the caregiver and patient allows the CTNs to better meet their needs. The program is personalized for patients as much as possible. The timing at which a patient receives the various modules of the intervention can be modified according to his or her circumstances and needs. For example, the decision-making module is generally introduced a couple of weeks into the program. However, CTNs have the flexibility to start this module earlier if they or other team members identify a concern (such as a safety issue) that might take precedence. In addition, program components can be modified to accommodate caregiver preferences. One care navigator described a situation in which a caregiver did not want to receive a copy of the medication list because it caused her a great deal of anxiety. Although this list is normally sent to participants for medication reconciliation purposes, it was not sent to this participant. The CTNs can also adjust how they interact with caregivers and the frequency of contacts. The frequency with which CTNs interact with the participant is dictated by participants’ specific needs and preferences, although the CTNs check in with them on at least a monthly basis. Furthermore, some caregivers who work during the day prefer to be called during

a lunch break or in the evening. Others request that the CTN leave a message so they can call back. This kind of flexibility rather than adhering strictly to a schedule improves the relevance and utility of the program for participants.

Scripts and protocols help CTNs interact with participants. The CTNs have access to scripted protocols, and templates covering various topics to help them structure the conversation with participants. For example, the decision-making module is among the more complicated because it involves legal, financial, and medical information that could have serious consequences if not delivered appropriately. To facilitate this, the awardee is developing a branching script that takes into account patient and caregiver characteristics, including patient decision-making capacity and what kind of advanced planning the family has already done. Using the IT platform, the care navigators will be able to easily implement this module in a series of phone conversations with the caregiver and patient. The RCs also use protocols, for instance, to determine the number of contact attempts with potential enrollees.

Training and regular care team debriefings give CTNs resources to establish trust with participants and identify key needs. Because the program is largely implemented telephonically, it is important that the CTNs have the ability to build rapport with participants remotely. The CTNs are trained in various areas to help them interact with participants. This includes training in motivational interviewing as well as on such topics as geriatric care, payment and insurance coverage, and legal issues. In addition, several of the CTNs from the University of California at San Francisco have also shadowed a geriatric provider to get a better sense of the issues caregivers and dementia patients face. Frontline staff said training is usually two to four weeks in duration when they first are hired. Additional training is offered as needed, and informal training occurs during weekly team meetings.

The program has experienced mixed success in engaging providers. Although the intervention is mostly aimed towards caregivers and the patients, a certain level of PCP involvement is integral to the success of the program. For example, CTNs send the providers the pharmacist's medication recommendations. In addition, aspects of the decision-making module, such as verifying the patient's decision-making capacity, require input from the provider.

Both implementing sites have been most successful working with providers in their affiliated centers. The vast majority of referrals for the University of California at San Francisco currently come from the MAC. In addition, the awardee is working on forming a partnership with the medical center's department of general medicine. Recruitment champions at partner provider sites have also been instrumental in getting the word out and establishing enrollment pipelines.

The University of California at San Francisco and the University of Nebraska Medical Center have experienced varying levels of interaction with providers outside their system. Furthermore, for many physicians who are not affiliated with their medical centers, staff have to request the patient's medical records and have had varying levels of responsiveness to such requests. Program leaders continue to pursue ways to address this matter, including identifying

how best to communicate with the providers. The emphasis is on letting PCPs know of the role of the program, with the goal of partnering with them while not adding any additional burden. PCPs receive a welcome letter when their patients are randomized to the treatment group. In Nebraska, which has a more rural population and many providers who are geographically dispersed, a clinical team member calls the participant's provider to personally introduce the study and answer questions. In addition, the CTNs fax or mail pharmacist recommendations and other materials to the provider and have also called the provider offices to follow up and ensure they received the medication recommendations.

"The issues are, because they are doctors and they're busy, we don't really know if they are getting the medication lists. We do try to follow up, but we're running into people maybe not following the recommendations that we're having or that our pharmacist is making. So, that is a constant issue and we're trying to always improve how we get them to look at these recommendations and, hopefully, take them seriously."

— *Care team navigator*

The University of California at San Francisco and the University of Nebraska Medical Center are also using the caregiver as a point of contact with the provider and as a way to inform them about the study while also empowering caregivers to take charge of the patient's health. For example, caregivers are encouraged to take the Dementia Care Ecosystem encounter summary documents and medication recommendations to PCP appointments.

The University of California at San Francisco and the University of Nebraska Medical Center experienced early challenges to recruitment and enrollment. Although they faced initial recruitment challenges, both sites have been able to identify multiple recruitment strategies that they expect to yield enough referrals.

- The University of Nebraska Medical Center expected to meet most of its recruitment goals through the Area Agencies of Aging (AAA), which serve a large portion of potentially eligible participants. However the number of actual people referred compared to the size of the potential referral pool has been very modest. Program leaders stated they received only about 10 referrals from one of the largest AAAs in Nebraska. "I cannot tell you how much time [we] spent trying to really streamline a way to make it easy for their case managers to refer subjects in our direction," one program leader said. Fortunately, one AAA in a very rural part of the state has been an exception and has helped recruit people living three-plus hours away from any major academic medical center.
- Both sites have hired bilingual CTNs and RCs to assist with recruitment and enrollment of monolingual populations. Study materials are also being translated into Spanish and Chinese.
- The public relations department at the University of Nebraska Medical Center is helping to identify outreach and enrollment opportunities.

The University of California at San Francisco, in particular, has experienced a surge in referrals from provider champions; now the challenge is hiring enough personnel to call and conduct baseline surveys with everybody. This lack of adequate staffing is a barrier to meeting

enrollment goals. Both sites are addressing this by adding more CTN and RC staff and expect a corresponding dramatic increase in participant enrollment. Another major challenge to enrollment at both sites has been reaching participants by phone once they are referred. Each site is trying different approaches, including calling at different times of the day and making multiple outreach efforts.

Retention of the control group is expected to be a challenge. Members of the control group receive minimal incentive to participate in the study. Many have already indicated disappointment at learning they were assigned to the non-treatment arm. Initially, the control group received only limited referrals to local resources, such as the AAAs and Alzheimer's Association. In an effort to minimize dropout rates, the University of California at San Francisco and the University of Nebraska Medical Center are also now sending quarterly newsletters and birthday cards. Program leaders are also exploring the possibility of providing monetary incentives for completion of the follow-up surveys or of offering control group members an abbreviated version of the intervention at the end of the study period.

3. How does the awardee make decisions about program-related changes?

The University of California at San Francisco leaders are making program-related changes based on feedback they are receiving from frontline staff. The program team works collaboratively and leaders are constantly seeking feedback from the frontline staff (CTNs and RCs) in order to improve the clinical workflow. Program leaders have made several changes as a result of such feedback, including modifying the interface of the dashboard to make it easier to enter data and altering the sequence of some of the questions that participants are asked. In addition to this ongoing informal feedback from frontline staff, program leaders are developing other qualitative methods, such as exit interviews, to collect feedback from frontline staff. As CTNs leave the program over time, leaders hope to have a standard data collection form for gathering information on how well they were trained as well as other to-be-determined topics that will improve implementation.

The University of California at San Francisco is also making ongoing program-related changes through data collected in its dashboard. The clinical workflow management tool collects an extensive amount of intervention data. Awardee leaders work closely with a dedicated IT team to make rapid changes to improve the intervention based on these measures. Such measures built into the system track patient and caregiver interactions with CTNs, medication adherence, and other activities. In addition, baseline as well as follow-up surveys collected for both the control and treatment group are within the dashboard.

Program staff report that feedback from participants and providers has been positive. CTNs reported that caregivers regularly thank them and are appreciative of the services they are providing. One CTN stated she was initially concerned over the ability to build rapport with patients telephonically but her experience has alleviated that concern. Participants regularly say they are grateful to have someone to talk to and answer their questions about their issues. One

CTN stated, for example, that a participant in a rural area who was uncomfortable talking to anyone from in her community was grateful for an outside voice.

Moreover, some of the providers who are aware of the study have been very appreciative of it. Program leaders reported that these physicians are now referring additional participants to the study. One staff member stated he heard from a provider who was grateful the team sent him the medication list.

Early discussions with CMS influenced the agile design of the program. Program leaders stated that several early discussions with CMS and its consultant about the design of the program helped them feel more comfortable with making ongoing changes to the implementation of the program throughout the course of the three years. One program leader stated, “We love this in a way because it really is going to help us provide the optimal intervention at the end of the trial.”

4. To what extent has the awardee begun to plan for or implement payment reforms?

The University of California at San Francisco is in the very early design phase of its payment reforms. It is considering two modules: (1) working within the current fee-for-service (FFS) payment model and (2) progressing toward a shared value/accountable care organization (ACO)/capitated model. Program leaders stated that the FFS piece creates the fundamental framework for the payment reform—creating incentives or, alternatively, a stated fee for program service which it is introducing as “chronic care management” service. The goal is to demonstrate what it costs to provide this service. The awardee is measuring the cost as well as how much value/savings results. The goal is to be backed by clinicians who could eventually charge for chronic care management.

For the second piece of the payment reform, the University of California at San Francisco hopes to partner with new types of practices, such as ACOs through a capitated payment model. Program staff stated this is the “radical” piece of the payment model because they are proposing that the outcome measures the awardee is tracking would replace the current underused nine dementia Physician Quarterly Reporting System (PQRS) measures.¹ The challenge would be to gain the buy-in from the relevant stakeholders, including CMS, but program staff hope to do this by measuring the costs and demonstrating the savings through this program.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we conclude that the University of California at San Francisco passes the criteria for evaluation using a multivariate regression-adjusted analysis to estimate program impacts. If the awardee meets its enrollment goal of 2,100 participants (1,400 in the treatment group) there will be

¹ The nine PQRS measures are (1) staging of dementia, (2) cognitive assessment, (3) functional status assessment, (4) neuropsychiatric symptom assessment, (5) management of neuropsychiatric symptoms, (6) screening for depressive symptoms, (7) counseling regarding safety concerns, (8) counseling regarding risks of driving, and (9) caregiver education and support.

sufficient power to detect a 10 percent effect for the likelihood of an all-cause hospitalization and ED visit. There will be insufficient power to detect a 20 percent effect for the four core measures (total expenditures, hospitalizations, hospital readmissions, and ED visits) even if the enrollment goal is attained. Challenges for the evaluation include a significant number of Medicare Advantage patients and uncertainty about data availability, as well as concerns with follow-up within the control group.

E. Next steps

We look forward to continuing to work with the University of California at San Francisco for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the summer of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact evaluation include executing the business associates agreement and memorandum of understanding, and obtaining data from the awardee. We will report baseline descriptive statistics when we have data for 50 participants in the treatment group. Regression-adjusted estimates will be included in the analysis when the sample is large enough to run models—approximately 300 participants in the treatment and control group and six months of exposure to the intervention. We will describe our findings in future reports.

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APPENDIX B.31

UNIVERSITY HOSPITALS CASE MEDICAL CENTER

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REPORT

APPENDIX B.31

HCIA Round Two Evaluation: University Hospitals Case Medical Center

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 22, 2015)

Successes

- Engaged hospital and program leaders motivate clinical staff to engage with the Learning Individual Needs and Coordinating Care (LINCC) program. This dedication and support from leaders has facilitated the successful implementation of the program.
- Unique characteristics of the community sites were conducive to program implementation, including their smaller size, fewer staff members, larger space, and ability to treat participants in their own communities.

Challenges and strategies to address them

- Integrating the clinical intervention into the workflow at the main campus was challenging because of several barriers, including lack of buy-in from clinic staff, time and space constraints, lack of clarity about the nurse care coordinator role, and morale. Several strategies were used to address these barriers, including educating staff, having nurse care coordinators see patients wherever and whenever possible, and clarifying the role of the nurse care coordinator.
- Recruiting patients and staff has been challenging. After initial difficulty meeting its recruitment targets, the awardee instituted a number of changes to the recruitment and enrollment process, which greatly increased enrollment numbers. Program leaders continue to work with human resources staff to recruit qualified candidates for unfilled positions.

Lessons learned

- Program success requires a dynamic team consisting of staff with varied skill sets who are willing to focus on team development. The abilities required for program success are not just technical skills but also soft skills, such as initiative, self-advocacy, and generosity. Program success also depends on having the right facilitators, such as sufficient physical space and supportive health information technology.
- When working on a demonstration project, the staff and program must be adaptable and flexible. For example, the intervention was tailored to better meet the needs of patients; minor modifications continue to occur to optimize the intervention and improve efficiency.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through our site visit on October 20 to 22, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for

specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Learning Individual Needs and Coordinating Care (LINCC) program, which is being implemented by the University Hospitals Case Medical Center. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Case Medical Center's program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partnering satellite clinics and payers. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to Case Medical Center's comprehensive cancer center, the University Hospitals Seidman Cancer Center (UHSCC); and a review of Case Medical Center reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Case Medical Center's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of Case Medical Center's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

Case Medical Center's Evidence-Conformant Oncology Care—known to program staff and participants as the Learning Individual Needs and Coordinating Care (LINCC) program—is intended to lower health care costs, increase participant satisfaction, improve family caregiver self-efficacy, and improve or maintain quality of care for individuals with complex cancer through patient-centered coordination of care. The primary components of the program include care management and the direct provision of care. Care management is led by a nurse care coordinator who helps the participant develop a care plan that details the participant's goals for care, including those related to advanced planning. The nurse care coordinator serves as a point of contact and advocates for the participant as he or she navigates the health system. The nurse coordinator also ensures that outpatient care is well coordinated, facilitates patient and family engagement and education, and links the participant and the family to internal and external resources. Direct care provision is provided by palliative care clinicians, who provide early and ongoing palliative care to program participants in order to improve the management of a patient's symptoms and improve communication surrounding goals of care.

To support the improvement of participants' physical, emotional, and social well-being, program staff routinely screen for biopsychosocial needs and assess participants' quality of life via an electronic assessment tool completed by participants. An extended version of the tool is administered upon enrollment and again at three, six, fifteen, and twenty-four months. Shorter versions are administered at variable intervals based on patient acuity, and reflect the midway point between patient visits to UHSCC. To date, program staff have focused on optimizing the primary intervention components; however, the awardee plans to develop a pharmacy program and a spiritual care intervention in the next quarter. The program's core clinical team consists of four nurse care coordinators, a palliative care physician, and a nurse practitioner—all of whom receive support from administrative and additional clinical staff.

The program's target population is adult Medicare and Medicaid beneficiaries who are receiving care at UHSCC for complex cancers. Eligible participants include patients with late stage (stage 3 or 4) solid tumors; patients with regionalized malignancies with significant comorbidities; patients with new disease progression; and patients with cancer who also have other risk factors for poor outcomes, increased expenditures, or high acute service utilization.

The primary goals of the program stated by Case Medical Center are to do the following by August 2017: (1) ensure that quality of care is maintained or improved; (2) improve scores by 5 percent on the Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS) survey; (3) improve the efficiency of health care delivery by reducing the total cost of care by 8 percent; and (4) demonstrate the feasibility and sustainability of an innovative, asymmetrical, shared savings payment model to support enhanced service delivery. The program's anticipated impacts include (1) improved coordination of care, education, communication, and focus on evidence-based practices for participants with complex cancers; (2) improved clinical outcomes and satisfaction across the care continuum for participants with complex cancers; and (3) reduced total costs for participants with complex cancers and more efficient use of resources, resulting in more capacity to help more participants. It should be noted that although Case Medical Center stated that decreases in avoidable emergency department (ED) visits, admissions, and 30-day readmissions were not among the program's primary goals or anticipated impacts, these measures are required by the HCIA R2 award and will be examined as part of the evaluation. Other key characteristics of Case Medical Center are described in Table 1.

In its theory of change, Case Medical Center hypothesizes that patient-centered care coordination that is aligned with evidence-based practice will improve health care and health outcomes for participants with complex cancers, as well as reduce costs. Improvements in quality of care, participant satisfaction, and service utilization will result in (1) improved health care overall for patients with chronic or complex health conditions, (2) improved health outcomes across the continuum of complex cancer care, and (3) lower health care costs.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by Case Medical Center to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to Case Medical Center's LINCC program (from October 20 through October 22, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

Table 1. Case Medical Center: LINCC characteristics at a glance

Program characteristic	Description
Purpose	The program is intended to lower health care costs, increase participant satisfaction, improve family caregiver self-efficacy, and improve or maintain quality of care for complex cancer participants through patient-centered coordination of care.
Components	<ul style="list-style-type: none"> • Care management (primary): A nurse care coordinator helps the participant to develop a care plan, serves as the participant's point of contact and advocate, facilitates patient and family engagement and education, links the participant and family to resources, and ensures that outpatient care is well coordinated • Direct care provision (primary): Early and ongoing access to expert-level palliative care • Health IT (primary): Routine screening for biopsychosocial needs and assessment of participants' quality of life to support the improvement of physical, emotional, and social well-being • Pharmacy intervention (secondary): Pharmacy-related support (to be developed) will offer an additional route to cost savings • Spiritual intervention (secondary): This includes intermittent spiritual assessments (to be developed) to address patients' spiritual needs
Target population	Adults receiving complex cancer care at UHSCC; eligible patients include complex cancer patients with late stage (3 and 4) solid tumors or new disease progression, patients with regionalized malignancies with complicating comorbidities, and patients with other risk factors for poor outcomes and increased expenditures
Theory of change/theory of action	Patient-centered care coordination aligned with evidence-based practice will improve health care and health outcomes for participants with complex cancers, as well as reduce costs. Improvements in quality of care, participant satisfaction, and service utilization will result in (1) improved health care overall for patients with chronic or complex health conditions, (2) improved health outcomes across the continuum of complex cancer care, and (3) lower health care costs.
Payment model	Shared savings, per capita care management payment
Award amount	\$4,675,383
Launch date ^a	2/19/2015
Setting	Comprehensive cancer center
Market area	Urban, suburban
Market location	Ohio
Core outcomes	<ul style="list-style-type: none"> • Maintain or improve quality of care compared to 2013 baseline data (when available) and comparable peer group • Improve the patient-reported experience of care for a cohort of approximately 1,800 complex cancer patients by 5% from 2013 over a comparable peer group • Improve the efficiency of health care delivery by reducing total cost of care for a cohort of approximately 1,800 complex cancer patients by 8% (\$6.08M) from 2013 • Demonstrate feasibility and sustainability of an innovative, asymmetrical, shared savings payment model to support enhanced service delivery • Decrease in avoidable ED visits, admissions, and 30-day readmissions (these are not among Case Medical Center's stated outcomes but these measures are required by the HCIA R2 award and will be examined as part of this evaluation)

^aAfter a planning period, the awardee's program became operational as of this date.

During the visit, we spent time at the UHSCC main campus and the two community sites at which the LINCC program had been recently implemented. At the main campus, we conducted

interviews with project leaders and administrative staff, including the executive project director, program director, program advisor, data analytics director, payment model director, and research assistant. We also interviewed core clinical staff, including nurse care coordinators, a palliative care nurse practitioner, and a palliative care physician (who treats patients at the main campus and at the two community sites). Last, we interviewed UHSCC leaders who are overseeing the implementation of the LINCC program at the Seidman Cancer Center including the director of nursing and the main campus's director of patient services for ambulatory sites. We then visited two community sites: (1) UH Chagrin Highlands Health Center, located in an eastern suburb of Cleveland, and (2) UH Westlake Health Center, located in a western suburb of Cleveland. At the community sites, we conducted an interview with the director of patient services at ambulatory sites for each region.

During the visit, we attended a presentation given by the president of UHSCC (who also serves as the executive project director of the LINCC program), toured all three facilities, and received a demonstration of the program's health information technology (health IT).

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts describing the implementation experiences. The team then extracted text pertaining to the research questions, which are identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this narrative on Case Medical Center's experience with implementing the LINCC program.

C. Findings

1. How effectively has the program been implemented?

The program has mainly been implemented as originally designed; however, a few significant changes have been made to staffing, the clinical intervention, and the recruitment process. These changes were made to improve the efficiency of the program and to optimize the delivery of services.

Staffing changes. With regard to program staffing, LINCC leaders made three changes to refine the role of the nurse care coordinators. First, they decided to hire a scheduling secretary in the near future who will be responsible for clerical work that is now being performed by the nurse care coordinators. The new position is expected to free up valuable time in the care coordinators' schedules to work with patients. Second, the care coordinators' schedule was changed from five 8-hour shifts to four 10-hour shifts a week to better align their workday with patients' availability. Third, the nurse care coordinators' original case load of 225 patients each is being modified because LINCC leaders have found that the coordinators can handle only about 160 patients (what the leaders call "saturation"). At the time of the site visit, program leaders were considering other options to make the nurse care coordinators' workloads more manageable—including, balancing the coordinators' cases according to patient acuity and adding

additional nurse care coordinators to maintain the original target number of patients—and they had intended to submit changes to the operational plan.

Clinical changes. Program leaders made one major change to the clinical intervention. The original plan was for nurse care coordinators to contact all participants on a monthly basis, but the plan was modified to be responsive to the lesser need to coordinate care for more stable participants. This group of participants is contacted by the nurse care coordinators halfway between each clinic appointment rather than monthly. It should be noted that in addition to this major change, LINCC leaders made minor adjustments to particular components or aspects of the intervention in response to certain challenges, which are described in Section C.2 below.

Recruitment and enrollment. Changes to the recruitment and enrollment process were made to improve the prospect of reaching the target population. In the original process, program staff reviewed the recommendations generated from 12 weekly meetings of the multidisciplinary tumor board to identify eligible patients. This arrangement was time-consuming and did not effectively identify patients with newly diagnosed stage 3 or 4 cancer, so in March 2015, LINCC leaders made several changes. First, the clinical eligibility criteria were expanded to include patients who were not newly diagnosed at stage 3 or 4 but who had recent disease progression.¹ Second, the grant manager began reviewing providers' schedules to identify eligible participants not discussed at the meetings. Third, nurse care coordinators began collaborating with clinic staff to identify eligible individuals immediately upon their entry into UHSCC. These changes rapidly increased enrollment.

At the time of our site visit, the program remained behind on meeting its enrollment targets but was in the process of making additional modifications to improve participant recruitment (Figure 1). First, program staff started using Caisis, a data management system already in use at UHSCC, to automatically generate a list of potentially eligible participants. Second, a care coordinator began attending the inpatient palliative care meetings to identify eligible individuals. Third, as a result of increased awareness of and support for the LINCC program, oncologists were making more referrals. These modifications were expected to enhance the sustainability and efficiency of the recruitment process, which could help the program eventually reach its target enrollment numbers.

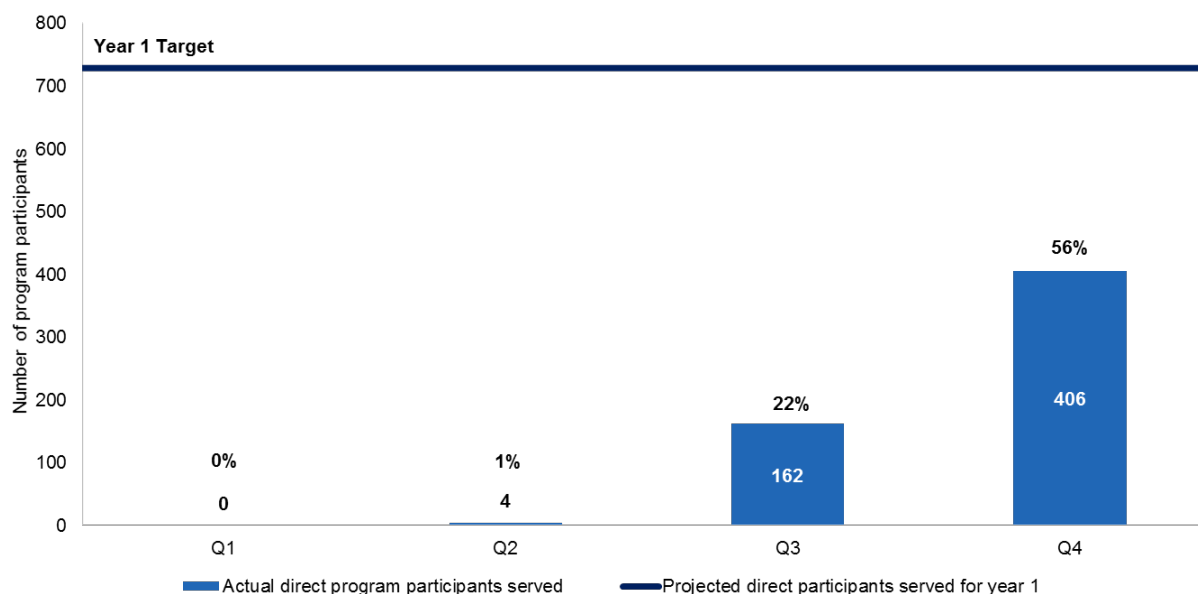
These improvements notwithstanding, the program was not implemented according to the original timeline for several reasons. First, program leaders reported that it was challenging to draft the operational plan and that the Center for Medicare & Medicaid Innovation (CMMI) requested technical assistance on the program's behalf so that the plan would meet the agency's standards. But program leadership also stated that because a key CMMI staff member was absent when program leaders were receiving technical assistance, CMMI's review and approval of the

¹ Program leaders reported that this expansion of the eligibility criteria was planned but was accelerated to respond to enrollment challenges.

final operational plan took longer than expected. According to program leadership, these factors delayed the program launch.

Second, program rollout in the community sites was delayed because Case Medical Center needed to hire more nurse care coordinators and establish the program at the main campus before implementing it elsewhere. As a result, the LINCC program has been implemented at only two of the five community sites.

Figure 1. Projected versus actual cumulative direct participants served through Year 1



Source: Data file from the implementation and monitoring contractor (first, second, third, and fourth program quarters), September 2014 to August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. University Hospitals Case Medical Center does not have indirect program participants.

Third, implementation of the secondary program components—the pharmacy and spiritual interventions—was postponed in order to focus on optimizing the primary clinical intervention. Further development of both secondary components is planned for the next quarter.

2. What are the facilitators and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

a. Primary components: Care management and direct care provision

UHSCC's patient care is organized around specific cancers (lung, breast, head and neck, gynecological) into what are called "disease teams." The LINCC nurse care coordinators carry out the care management component of the program, with each working with one or more of these particular teams. Some nurses work with more than one team. All of the nurses serve as both an extra layer of support and the primary point of contact for participants throughout their treatment, by helping patients manage their appointments, symptoms, medications, and care plans. The nurse care coordinators follow up regularly with participants by phone and in person to conduct needs assessments and then to link participants and families to appropriate resources, such as social work and palliative care. The nurses also facilitate smooth transitions between inpatient and outpatient care.

"Part of my focus is working on symptom management with patients, trying to identify what symptoms they're having throughout their cancer treatment or throughout their illness, and then linking those patients up to one of our palliative care doctors. . . . The other part, care coordination, is really just trying to help patients and improve their experience within the health care system. . . . I think patients have really appreciated just having a person that they can contact."

—Nurse care coordinator

The palliative care providers—a physician and a nurse practitioner—are responsible for direct care. They provide palliative care (and symptom management) for participants referred to them by the nurse care coordinators or clinical staff. The physician, who treats participants at the main campus and at the two community sites, is temporarily responsible for managing the care of participants at the community sites until more nurse care coordinators are hired and trained. The nurse practitioner treats participants at the main site and serves as the clinical leader for the nurse care coordinators by meeting regularly with them to provide support and answer medical questions.

The primary components of care management and direct care provision make up the program's clinical intervention. Although we are distinguishing between the two components for evaluation purposes, the program staff consider them as one. As a result, the program facilitators and barriers identified by respondents apply to both components. The most salient facilitators are summarized first.

Engaged, passionate, accessible program leaders motivated the clinical staff to engage with the program. Nurse care coordinators described program leaders as a close-knit group that is communicative, adaptable, and committed to serving patients. UHSCC leaders, the care coordinators, and the palliative care providers reported that the program leaders themselves motivated oncologists and nurses at the center to support the program and to refer patients to it.

“In terms of making our program work for the people working on our program, we’ve had a lot of support from Seidman hospital leadership, which has been really wonderful. . . . We have somebody who is listening and advocating at a very high level on leadership. . . . That’s been very helpful in trying to get things done quickly and get engagement from other parts of the hospital or whoever it is we need to.”

—Palliative care provider

Support from UHSCC leaders facilitated the successful implementation of the clinical intervention. Program leaders reported that they have had a high level of support from UHSCC leaders, whom they view as an important influence on program success. For example, when the program needed health IT support, UHSCC leaders made it a priority. Program leaders also said that support from UHSCC leaders reflects how the program aligns with the culture of the center, which has an interest in care coordination and value-based care.

The program’s core clinical staff have leveraged their experience and the experience of the disease teams to boost support from UHSCC staff for the program. For example, a nurse care coordinator who once worked with one of the disease teams took advantage of her familiarity with the team members to develop a strong rapport with them, thereby making them more receptive to the program. Some teams had experience with care coordination, which made them more willing to accept the program. For example, the head-and-neck cancer team had a long-standing weekly meeting dedicated to discussing care coordination, and the lung cancer team had piloted a similar program that connected patients with advanced disease to social services and additional clinical resources.

Characteristics unique to community sites were conducive to program implementation. The smaller staffs at community sites made it easier to introduce the program and get clinical staff on board. Although space is at a premium at the main campus, the community sites have space to support the program. Location is a factor as well because participants do not have to leave their communities in order to be treated. For instance, because the program was rolled out in an eastern and a western suburb of Cleveland, more patients could participate more easily. It is also worth noting that the palliative care physician, the only staff member physically present at the community sites, has facilitated implementation by performing her regular palliative care responsibilities and the care management responsibilities.

Some challenges to implementing the clinical intervention, along with strategies to mitigate them, were also identified.

It was difficult to integrate the clinical intervention into the workflow at the main campus. Several barriers to incorporating the intervention were identified, including slow buy-in by the clinic staff, time and space limitations, early uncertainty about nurse care coordinator roles, and low morale among the nurse care coordinators. The program's nurse care coordinators and palliative care providers reported that with a large number of constantly rotating clinic staff at the main campus it was often challenging to maintain continuous support for the program. This was addressed through regular communication with staff and education about the program. Nurse care coordinators also reported taking extra steps to help clinic staff as a way to build rapport and support for the program. Another challenge was that nurse care coordinators had difficulty finding times and space to see patients. The response to this challenge was seeing patients whenever and wherever they could: before or after appointments, during infusions, or when oncologists were behind schedule. Nurse care coordinators initially did not fully understand their role and the expectations, which contributed to low morale. This was resolved by having the palliative care nurse practitioner, who also serves as the clinic leader for the nurse care coordinators, work with the nurse care coordinators to better define their role. In addition, the clinic leader plans to engage human resources staff and the nurse care coordinators at the start of Year 2 to review changes, goals, and opportunities to support the nurse care coordinators.

"I think one of the barriers here has been that it [the main campus center] is big, with lots of people. So even if you explain [the LINCC program] to one person, and there might be one MA (medical assistant) or one clinic that really got used to it and want it, but that doesn't mean you're going to have that same group the next day. So I think that was a real barrier."

—Palliative care provider

Some physicians have a hard time understanding and accepting palliative care. Physician misconceptions about palliative care included viewing it as tantamount to hospice care, giving up on a patient, or even personal failure. Although physician understanding and acceptance of palliative care varied to some extent by disease team, low physician acceptance led to lower numbers of referrals from certain teams and less engagement in the program from the patients they treated. The program leaders, care coordinators, and palliative care providers have been using education strategies to enhance physician understanding and acceptance of palliative care. Program leaders presented at nearly 20 clinic staff meetings at the main campus to introduce the program and generate interest; once the program launched, they continued to remind clinical staff about the program and created information sheets for physicians. Palliative care providers and nurse care coordinators reported having one-on-one meetings with physicians to assure them that program participants are not entering hospice prematurely.

Recruiting qualified nurse care coordinators remains challenging. Case Medical Center had planned to hire five nurse care coordinators by the end of the first year (which was August 31, 2015). By the time of the site visit, three nurse care coordinators had been hired and were carrying out the intervention. A fourth was only recently hired and the fifth position remains vacant. The difficulty filling this position is impeding not only enrollment, but also

"I have declined a number of candidates because I'm looking for someone not only who has the clinical experience, but has had some development in project or leadership at an informal level. But who can really move a program forward and negotiate the nuances of working with a complex disease team, basically be that person who can influence the clinicians that they're going to be working with and that they are the value added to that particular clinician's patients and families."

— UHSCC leader

implementation at the community sites because the three care coordinators have reached saturation with their caseloads. Although many candidates have applied, program leaders and frontline staff reported that it is difficult to fill the positions because they are looking for people with a special strength and sense of self-direction. Leaders of the LINCC program continue to work with the UHSCC human resources department to promote the position and are now approved to offer a signing bonus to attract more promising candidates.

There are challenges with the biopsychosocial assessment questionnaires, which participants complete on iPads. First, the questionnaire is long (around 90 questions for the extended assessment and 60 for the interval assessment), so it takes participants 10 to 20 minutes to complete. Although program staff recognize that the long length of the questionnaire facilitates robust data collection to measure program effects, they also feel that the assessment asks for more information than is clinically relevant and cuts into the nurse care coordinators' time. Also challenging is the fact that some program participants—particularly elderly and low-income participants—are not familiar with iPads, so they need assistance. As a result, nurse care coordinators find themselves walking through the questionnaire with participants rather than having participants complete the assessment independently, which further limits the care coordinators' time. A number of changes have been made (or will soon be made) to the assessments to address these issues. First, because the assessment comprises several validated tools, there are some duplicate questions, which have since been removed to streamline the assessment. Second, the research assistant is working with the creators of the iPad application to make the assessment more user-friendly. Last, at the time of the site visit, the program began piloting a new process in which medical assistants, rather than care coordinators, administer the assessment.

b. Secondary components: Pharmacy and spiritual interventions

The program's two secondary components—the pharmacy and spiritual interventions—are still in development and have yet to be implemented. As described in Case Medical Center's original application for the HCIA R2, the pharmacy intervention will aim to save costs by proactively identifying deviations from evidence-based prescribing. The nurse care coordinators and palliative care providers reported not knowing specific details about the pharmacy intervention. Program leaders reported that they were working with an oncologist at UHSCC to

provide some pharmacy-related support to the program while they continue to build the infrastructure and recruit a part-time pharmacist for the LINCC program.

The spiritual intervention is intended to provide spiritual care to program participants when spiritual needs are identified from the biopsychosocial needs assessment. Nurse care coordinators reported that they currently assess participants' spiritual needs via the biopsychosocial assessment tool and refer participants to the UHSCC spiritual counselor or to other internal or external resources (for example, to clinic support groups and a local cancer support charity) when appropriate. The awardee plans to further develop the spiritual intervention in the next quarter.

Although the secondary program components are still in the development phase, both the pharmacy and spiritual interventions have benefited from having internal UHSCC employees provide support while they are being developed. For the pharmacy intervention, the LINCC leaders are working with an oncologist in the UHSCC system to discuss ideas and plans for the intervention. For the spiritual intervention, the spiritual counselor at the UHSCC main campus and social workers at the community clinics are providing support to participants until a spiritual care position is hired.

As discussed below, program leaders identified not only a challenge specific to each secondary component, but also a strategy for mitigating each one.

Recruiting a pharmacist for the pharmacy intervention remains challenging. UHSCC continues to experience difficulty recruiting a qualified pharmacist to lead the pharmacy intervention. This challenge may be due, at least in part, to the fact that the program is funded by a time-limited grant, while candidates may be seeking long-term job stability. Although this issue remains unresolved, the awardee has developed a work-around. LINCC leaders are working with a UHSCC oncologist and also have access to a Case Medical Center pharmacist to help develop plans for the pharmacy intervention prior to hiring a part-time pharmacist. Program leaders expect to fill the position when new doctor of pharmacy graduates enter the job market in mid-2016.

The nurse care coordinators have a difficult time assessing participants' spiritual needs. The nurse care coordinators reported that they felt the spiritual questions on the biopsychosocial assessment tool were awkwardly worded and that they were not always comfortable broaching spiritual issues with patients. The program leaders and palliative care providers hypothesized that the true needs for spiritual care among program participants may be higher than the assessments would suggest due to the challenges in assessing spiritual needs. To address this challenge, the program's research assistant and one of the program leaders have selected an alternative validated tool to include in the assessments. They also intend to provide informal education to the nurse care coordinators on discussing spiritual care.

c. What specific implementation changes are anticipated in the coming months?

To date, the awardee has mainly focused on implementing the primary clinical intervention at the main campus and recently at two community clinics. In the coming months, Case Medical Center will continue to develop the secondary program components and work toward expanding the program at the remaining four community sites. The awardee also plans to fill remaining staff positions, including the open nurse care coordinator position, the pharmacy position, the spiritual care position, and the scheduling secretary. The awardee stated that the recently hired fourth nurse care coordinator, who is in the process of being trained, will enable increased participant enrollment. Last, as the program ramps up and preliminary data on program outcomes become available, the awardee plans to more formally engage with payers in developing the final payment model.

3. How do the awardee and implementing sites make decisions about program-related changes?

Although the data reporting systems for the LINCC program are still being developed, the awardee has implemented various processes to support self-monitoring activities and to provide opportunities for continuous improvement. The director of strategic planning and analytics at UHSCC, who is responsible for analytic reporting, can use billing data to report on utilization (for example, ED admission rates). This director is also building a robust reporting system with automated abstraction processes to support self-monitoring. As part of this effort, this person is identifying gaps in internal metrics; establishing a process for obtaining data from external stakeholders (for example, hospices); and considering how to build fields in the electronic medical records (EMRs) to support data collection. The program manager is responsible for reporting fidelity metrics to assess the extent to which the program intervention is operating as designed. As the clinical leader for the care coordinators, the palliative care nurse practitioner brings feedback from the care coordinators to program leaders. In addition, all program staff are encouraged to provide feedback during regular meetings and on an ad hoc basis.

Program participants, nurse care coordinators, palliative care providers, and UHSCC staff have provided informal feedback to LINCC leaders and staff. Many participants have expressed gratitude for their care coordinators and feel confident that their care coordinators will be able to answer their questions or properly direct their calls. Conversely, several participants have said they dislike what they regard as too-frequent contact by the nurse care coordinator and the lengthy assessments. Despite this pushback, most program leaders and staff feel that participant feedback has suggested that participants like the program. All nurse coordinators recounted examples of how they have improved patients' care and experiences, such as mediating discord between a patient's family and the inpatient care team, fulfilling a patient's wish for last rites, or providing emotional support to someone who was alone when she received her cancer diagnosis. In addition, leaders have received informal positive feedback from other members of the care team. Specifically, oncologists have recounted situations in which the nurse care coordinators helped their patients, and some oncologists have begun inquiring whether other patients they treat are eligible for the LINCC program.

Most of the program's core clinical staff described the LINCC leadership team as very open-minded. The nurse care coordinators and palliative care providers can provide feedback in weekly LINCC meetings as well as in smaller clinical team meetings. The nurse care coordinators and palliative providers alluded to frustrations that are to be expected when implementing a new program (for example, defining roles, balancing clinical and research needs, fitting into the clinic flow); however, most felt that leaders were receptive to their suggestions.

Early feedback from program participants and staff resulted in changes to the intensity of the intervention, modifications to the biopsychosocial assessments, and adjustments to the nurse care coordinator's workload and schedule. Patients who did not have active symptoms showed resistance to monthly calls from the nurse care coordinator. Similarly, nurse care coordinators felt that they were needlessly bothering some of the patients. In response, the frequency of contact was decreased for more stable patients. Program staff continue to explore ways to meet the proper level of need for patients with different disease progression who are cared for by different disease teams. As mentioned, the nurse coordinators' caseloads and schedules have been changed to better accommodate patients' schedules. In addition, coordinators and patients alike believe that the assessments are long, redundant, and awkwardly worded. In response, program leaders have worked to eliminate redundant questions and to find more appropriate tools for assessing spiritual needs.

Decision making among LINCC program staff has also been influenced through staff engagement with a diverse group of external stakeholders, including extended UHSCC leadership, hospice centers, and resources for cancer patients. Engagement of the wider UHSCC leadership team has promoted organizational support leading to prioritization of such LINCC activities as building the IT infrastructure. Community organizations for cancer patients such as the Gathering Place (a cancer support center) and Hope Lodge (a facility that provides lodging for patients and families during treatments) have provided an extra layer of support to which coordinators and social workers can connect patients.

Finally, the awardee's interactions with CMMI and its contractors influenced program-related decisions, including the program's final operational plan and fidelity to the proposed timeline. Implementation was delayed for several months while program staff worked with a CMMI contractor to revise the operational plan. The program also underwent several iterations before it was approved by the Centers for Medicare & Medicaid Services (CMS). The already-hired frontline staff remained idle but eager to begin work while waiting for CMMI to approve the operational plan. Nevertheless, staff said that they have a positive relationship with CMMI and its contractors; they also expressed an interest in the webinars that CMMI is sponsoring for the HCIA R2 awardees.

4. To what extent have the awardee and sites begun to plan for or implement payment reforms?

The proposed payment model is a per member per month (PMPM) payment that covers all direct program expenses, with shared savings at a negotiated rate that is still to be determined.

Clinical services that are otherwise reimbursable by payers are not covered by the PMPM payment, and the amount of the capitated payment will be re-evaluated as the program continues.

A key facilitator to developing the payment model has been engagement from commercial payers that view cancer care as an area of high expense and are interested in finding ways to reduce costs. Program leaders have engaged commercial payers by presenting the LINCC program and asking for initial letters of support (which they succeeded in obtaining from five payers). From past experiences with payers, leaders understand the importance of engaging payers early to build their sense of ownership in the payment model. LINCC leaders also understand the need for data that is convincing enough to build a business case to attract commercial payers. LINCC leaders plan to continue to engage payers more formally once they have developed a more robust evidence base and once the season for renewing or negotiating new contracts with payers concludes. The program may be able to take advantage of the engagement of some payers to generate interest from others.

Drawing on lessons learned from developing and implementing a similar payment reform for a different CMMI grant focused on pediatric care coordination, the awardee had anticipated a few challenges and has developed strategies to address them. First, commercial payers may be less willing to participate if there is no evidence that the innovation is working. To address this challenge, the awardee is collecting data internally and is working to establish or maintain data sharing agreements with external stakeholders (for example, payers and other hospitals and hospices where participants may receive services) to measure program effects. Case Medical Center also recognizes the value of engaging payers in developing the payment model. By collaborating with payers, the awardee expects to increase payers' acceptance of the model. Second, the high degree of variability in the cost of cancer care among a small number of cases poses a challenge for setting a shared savings target. Case Medical Center's participation in the University Hospitals Consortium—a national collaborative of academic medical centers—is expected to help address this challenge because the collaborative is studying this issue independently. Case Medical Center also expects to learn from peer academic medical centers and from other HCIA R2 awardees who may encounter similar challenges.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we conclude that a rigorous impact analysis is feasible. A difference-in-differences estimation framework is proposed to analyze the impact of this intervention on a wide range of outcomes, such as all-cause hospitalization rate and hospice use, by using Medicare and Medicaid claims data for the treatment group and a matched comparison group from the same area. We will estimate changes in outcomes before and after the start of the intervention for patients with late-stage and complex cancers in the treatment group and matched comparison group patients, subtracting the latter estimate from the former to obtain program impacts. Comparing changes in outcomes across treatment and comparison patients (the difference-in-differences approach) allows us to account for potentially confounding secular trends occurring over the study period.

The primary assumption of the proposed design is that, absent the program, patients in the treatment and comparison groups would have experienced similar outcomes.

E. Next steps

We look forward to continuing to work with Case Medical Center for the remaining portion of the cooperative agreement. We will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact evaluation include assessing baseline characteristics of the patients in the treatment and comparison groups, matching clinical data from the Ohio state cancer registry to those enrollees' Medicare and Medicaid claims and matching the patients listed in the awardee's finder file to their appropriate Medicare claims. We will then perform a descriptive analysis of the two groups and begin the propensity score matching process. We will produce a table of descriptive characteristics for each group before and after matching. We will then produce initial impact estimates for the first one to two quarters of program operations, depending on data availability, after creating our outcome and explanatory variables. We will describe our findings in future reports.

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APPENDIX B.32

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

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REPORT

APPENDIX B.32

HCIA Round Two Evaluation: The Board of Trustees of the University of Illinois

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 8, 2015)

Successes

- As of August 2015, the University of Illinois had exceeded its enrollment target for the first year of the Coordinated Health Care for Complex Kids (CHECK) program.
- As of October 2015, the CHECK program had hired all key administrative staff and most of its frontline workforce. CHECK staff worked with subspecialty medical directors and a training partner to develop and implement disease-specific training for community health workers and to create care coordination protocols for each of the targeted conditions.
- In the first year of implementation, the CHECK program partnered with technology vendors (Clear Tec Solutions and Purple Binder) to develop and roll out a customized care coordination software (Consensus) to integrate social service resources.
- The CHECK program developed and promoted MyCHECK, an online portal that provides participants and their families access to disease-specific, self-education materials. The program also launched a pilot of the MyTapp SMS application to identify promising text messaging strategies for the care coordination team.

Challenges and strategies to address them

- Since the University of Illinois applied for Round 2 of the Health Care Innovation Awards, the Illinois Medicaid agency transitioned to mandatory managed care for nearly all of the target population. The awardee now must work with individual managed care plans to obtain claims data necessary to identify eligible participants, rather than receiving the data from the state. As of October 2015, the awardee had contracted with two managed care plans (UI Health Plus and Harmony Health) and was pursuing agreements with others.
- The transition to managed care for the Medicaid population affected the CHECK program's ability to engage community-based health centers in program implementation. Many community health center networks now have their own care coordinators and want to manage their care coordination programs internally. Program staff are working to establish relationships by demonstrating how the CHECK program can complement partners' programs by providing additional coordination of community and social services.
- The CHECK program struggled to assess and engage enrolled participants while it was developing its workforce and technology infrastructure. With care coordination software and new care coordination leaders in place, the CHECK program is working to increase participant engagement.

Lessons learned

- Program leaders were limited by a condensed planning period, which hampered their ability to ensure that they had sufficient staffing and technology infrastructure prior to enrolling participants.
- The CHECK program required that program staff adapt program strategies to changing realities while maintaining a commitment to the program's core mission.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 8, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Coordinated Health Care for Complex Kids (CHECK) program, which is being implemented by the University of Illinois. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the University of Illinois' CHECK program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organization. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a visit to the University of Illinois in October 2015; and a review of awardee reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the University of Illinois' program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the University of Illinois' impact evaluability assessment and identify the next steps in our evaluation.

A. Introduction

The University of Illinois College of Medicine is working with training partners and technology vendors to improve care coordination for children and young adults (age 25 and younger) with chronic medical conditions in Cook County, Illinois. The CHECK program is trying to engage participants "where they are." Thus, the program sends community health workers to participants' homes, social service agencies, community- and school-based health centers, and other local sites that are convenient for the participants and their families.

The CHECK program comprises several program components:

- Enhancing care coordination for participants and their families and providing customized support to meet participants' health and social needs
- Providing direct mental health promotion services and supporting access to mobile oral health services
- Offering telemedicine tools such as online self-education portals and text messaging applications to support care coordination
- Implementing new software to support care coordination and track participant engagement

To be eligible for the program, participants must (1) be diagnosed with diabetes, sickle cell disease, asthma, prematurity, or at least two other chronic conditions¹ and (2) be enrolled in a Medicaid managed care plan under contract with the CHECK program or be Medicaid beneficiaries who are not eligible for managed care (that is, Medicaid fee-for-service beneficiaries).

¹ At the time of the site visit, the awardee was considering removing "at least two other chronic conditions" from its eligibility criteria because these participants are unable to benefit from the program's specialized resources for the four main targeted conditions.

The CHECK program has a passive enrollment strategy and defines three levels of participant involvement in the program: (1) enrolled, (2) engaged, and (3) activated. The CHECK program identifies eligible participants using Medicaid claims data and considers participants to be enrolled in the program when an enrollment letter is sent to the family. Enrolled participants are able to opt out of the program at any time. The program considers enrolled participants to be engaged in the program after a CHECK staff member begins an initial assessment with the participant (by phone or in person). Finally, engaged participants are considered to be activated when the program's care coordination software generates a care plan for them. The care plan identifies specific tasks for CHECK staff to carry out based on the participant needs indicated in the initial assessment. Once activated, participants begin receiving program services. Based on recent conversations, CHECK staff aim to enroll 6,000 participants by the end of the project period. Of these, they expect to engage approximately 4,000 participants and activate approximately 3,000 participants.² The CHECK program began serving participants in December 2014. As of August 31, 2015, the program had enrolled 6,144 participants, engaged 1,034 participants, and activated 543 participants.

The CHECK program aims to accomplish three goals by the end of the three-year cooperative agreement:

1. Increase the number of participants and families who are actively engaged in their own care
2. Improve participants' health and quality of life, including improving school attendance
3. Reduce total cost of care for the patient population

The awardee hypothesizes that providing enhanced care coordination for children with chronic medical conditions will increase their access to health and social services and improve management of their conditions. The University of Illinois's CHECK program will support care coordination activities with new software and consumer-facing technology. Improved access to social services and primary, specialty, and mental health care will result in better health and social outcomes, fewer hospitalizations and emergency department (ED) visits, and lower costs. Other key characteristics of the CHECK program are described in Table 1.

² This information is based on the most recent information received from the awardee on January 5, 2016. The numbers for enrolled, engaged, and activated participants may change pending further discussions between CMMI and the University of Illinois.

Table 1. University of Illinois: CHECK characteristics at a glance

Program characteristic	Description
Purpose	The University of Illinois is working with training partners and technology vendors to implement the Coordinated Health Care for Complex Kids (CHECK) program in Cook County, Illinois. The program sends community health workers to participants' homes, social service agencies, community- and school-based health centers, and other local sites convenient for the participants and their families.
Components	<ul style="list-style-type: none"> Enhanced care coordination (primary) Direct mental health promotion services and oral health services (secondary) Telemedicine tools (online self-education portal, text messaging application) (secondary) Health information technology (care coordination software with integrated social service resources) (secondary)
Target population	<p>Enroll 6,000 children and young adults (age 25 and younger) with chronic medical conditions; initiate assessments with approximately 4,000 participants; and create care plans for approximately 3,000 participants. Participants must meet the following criteria:</p> <ul style="list-style-type: none"> Be diagnosed with diabetes, sickle cell disease, asthma, prematurity, or at least two other chronic conditions Be enrolled in a Medicaid managed care plan under contract with the CHECK program or be Medicaid beneficiaries who are not enrolled in managed care
Theory of change/theory of action	The awardee hypothesizes that providing enhanced care coordination for children with chronic medical conditions will increase their access to care and improve management of their conditions. The CHECK program will support care coordination activities with new software and consumer-facing technology. Improved access to social services and primary, specialty, and mental health care will result in better health and social outcomes, fewer hospitalizations and emergency department visits, and lower costs.
Payment model	<p>Per capita care management payment</p> <p>Offer managed care organizations a suite of CHECK products (care coordination, technology, mental health promotion) with associated per member per month fees.</p>
Award amount	\$19,581,403
Launch date ^a	December 2014
Setting	Community health workers engage participants and families at home or in the community. Mental health promotion staff provide direct promotional services to participants by phone and in the CHECK offices. CHECK also provides care coordination and mental health services through telemedicine tools (text messages, webcam). The program will partner with a mobile health van to provide oral health services.
Market area	Urban
Market location	Cook County, Illinois
Core outcomes	<ul style="list-style-type: none"> Increase the number of participants and families actively engaged in their own care Improve participants' health and quality of life, including improving school attendance Reduce total cost of care for the patient population

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by the University of Illinois to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions

with the awardee and during a site visit to the CHECK program (October 2 to 5, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed program leaders at the University of Illinois; key frontline staff (care coordinators, community health workers, and mental health promotion team staff); and other program stakeholders, such as the program's subspecialty medical directors, the mental health promotion director, and staff leading the health technology and telemedicine components. We visited the University of Illinois College of Medicine administrative office, which houses the program staff, as well as the university's outpatient pediatric clinic, which is currently partnering with the CHECK program.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts that describe the implementation experience. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative on the University of Illinois' implementation experience.

C. Findings

1. How effectively has the program been implemented?

The University of Illinois implemented most of its CHECK program as planned but altered some aspects of the program:

- The University of Illinois originally included depression as a qualifying diagnosis in its eligibility criteria but removed it because it is often undiagnosed and, therefore, difficult to target. However, because of the prevalence of depression and other mental health issues in the patient population, the program will offer mental health screening and brief supportive and skill-building interventions through its mental health promotion team (described in more detail below). Similarly, the awardee identified oral health as a significant need for the target population and has incorporated oral health services and patient education into the CHECK program plans.
- The University of Illinois initially proposed providing participants with transportation to medical appointments but has since identified underused transportation services in the community. The awardee decided to have the community health workers help participants connect to existing transportation resources rather than develop its own transportation services.

- When the University of Illinois applied for HCIA R2 funding, it expected to contract with the state Medicaid agency directly to obtain claims data to identify potentially eligible participants. Due to the state's recent transition towards mandatory managed care for Medicaid beneficiaries, the state now requires the awardee to contract with individual managed care plans to obtain these data. As a result, program enrollment is limited to children and adolescents enrolled in a Medicaid managed care plan with which the CHECK program has contracted, or those not yet enrolled in a managed care plan. At the time of the site visit, the program had contracted with two Medicaid managed care plans (UI Health Plus and Harmony Health) and was pursuing agreements with additional plans.³

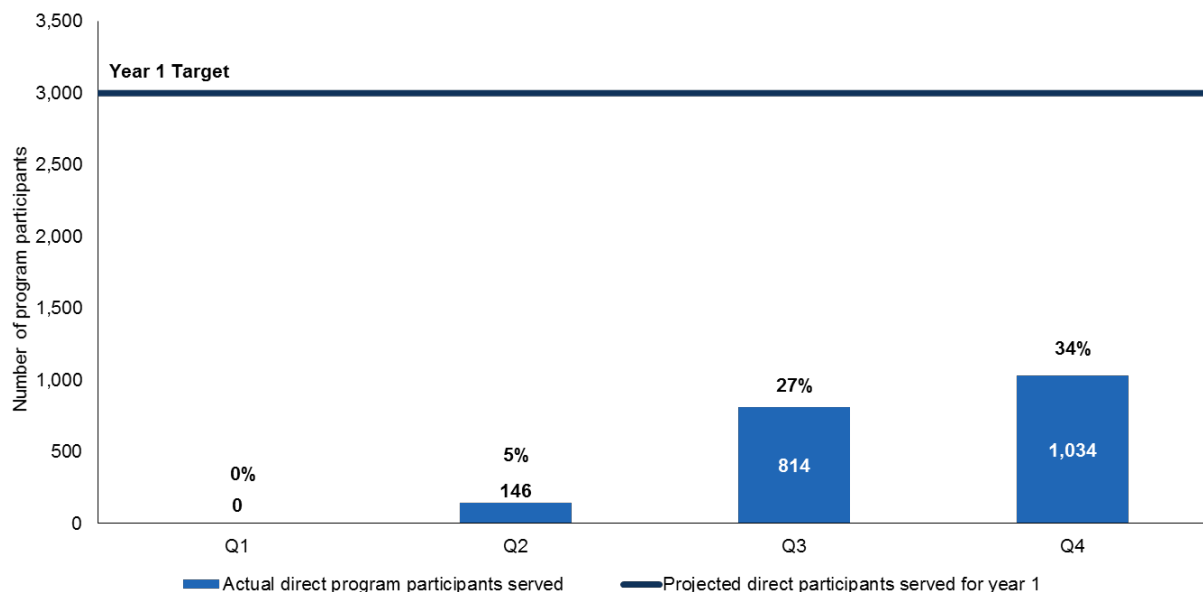
"When the [HCIA R2 application] was written it was not envisioned to fit into this managed care model because that hadn't really happened yet. A lot of what we've had to do in the first year was figure out how we're going to adapt."

— *CHECK program leader*

Despite challenges obtaining claims data to identify eligible participants, the CHECK program exceeded its enrollment targets in the first year of the program. However, the awardee fell short of its goal for engaging participants in CHECK services (Figure 1). As of August 2015, the CHECK program enrolled 6,175 participants and conducted an initial assessment with 1,034 participants. The awardee reported that the program activated (that is, created care plans for) 543 of these participants (not shown in Figure 1). We provide more details on barriers to engaging CHECK participants below.

³ After the site visit in October 2015, UI Health Plus merged with Blue Cross Blue Shield of Illinois, requiring that the CHECK program establish a new contract with the plan. More information about these changes will be included in future reports.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementing and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award (such as an initial telephone assessment or home visit) from program launch through the fourth program quarter. The University of Illinois does not have indirect program participants. The direct participant projections reported to the implementation and monitoring contractor differ from the expected number of engaged participants reported during interviews with the awardee. We will revise these projections in future reports.

The CHECK program experienced implementation delays related to institutional and state regulations on contracts and hiring as well as changes in the Illinois Medicaid environment:

- University and state hiring and procurement regulations delayed development of program infrastructure. Because the CHECK program is housed within a public university, the program must adhere to the same hiring and procurement requirements of any state entity. Program leaders reported significant delays in hiring program staff and executing contracts with technology vendors and managed care plans due to strict university and state regulations. Despite these barriers, the CHECK program successfully executed contracts with several partners and hired most of its expected staff during the first year of implementation. At the time of the site visit, the CHECK program had launched its care coordination software, developed its online self-education portal, created and implemented many of its disease-specific care coordination protocols, and started to pilot its text messaging application. The CHECK program also hired much of its administrative and frontline staff, including five care coordinators, 15 of the expected 30 community health workers, and four mental health promotion staff (two psychology externs and two counselors with master's degrees). As a result of the staffing delay, care coordination teams

were still ramping up their participant outreach (described in more detail below) and the mental health promotion team had just started meeting with participants.

- The CHECK program experienced delays in engaging external partners as a result of Illinois' shift towards managed care for Medicaid beneficiaries. The program hopes to partner with approximately 40 community- and school-based health centers.⁴ However, program leaders report that many community health centers now plan to manage their own internal care coordination and are hesitant to partner with the CHECK program. At the time of the site visit, CHECK staff were actively implementing the CHECK program within the university's outpatient pediatric clinic and had started to engage with a network of 10 community health centers affiliated with the University of Illinois (Mile Square Health Centers). The program's medical director and community and provider relations director are working together to gain buy-in from community health centers by demonstrating the CHECK program's value as a supplemental resource to the health centers' internal clinical care coordination. The CHECK program expects to finalize a partnership with another network of three community health centers (Esperanza) in the near future and will continue to pursue partnerships with additional community health centers that provide services to large numbers of participants enrolled in the program. Program leaders expect to embed community health workers in participating community- and school-based health centers once the program formalizes its partnerships with these organizations.
- 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?**

The four components of the CHECK program are closely linked. Although we are distinguishing between these components for evaluation purposes, CHECK staff consider them to be part of an integrated program. As a result, we first describe the program components, then discuss key program facilitators, and finally identify barriers and corresponding solutions. We address the question above in this manner because the facilitators and barriers affect all components.

a. Program components

Primary component: enhanced care coordination. CHECK aims to enhance coordination of medical and social services for the children and young adults in its target population. CHECK hired and trained two key staff roles—community health workers and care coordinators—to implement care coordination activities. Community health workers are the program's frontline workforce, meeting participants at home, in the health center, and in the community. Most community health workers are high school graduates with some experience advocating on behalf of participants. Each of the program's five care coordinators oversees a team of community

⁴ The University of Illinois is reconsidering the number of community- and school-based health centers it plans to engage in the CHECK program. As a result, the number of expected partners may change.

health workers and helps them troubleshoot participant challenges. Care coordinators generally are not clinically trained but have bachelor's degrees in related fields such as public health.

To coordinate participant care, CHECK care coordinators review participants' information to verify that the participants meet eligibility criteria. Community health workers then conduct a telephone assessment with newly enrolled participants (or participants' caregivers) to identify their unique medical and social needs. Community health workers work with participants and their families to develop a care plan. Participants receive differing program services according to their specific needs. Some participants require significant outreach from CHECK staff—for example, home visits from the program's community health workers—and ongoing support to coordinate primary and specialty care appointments; others might benefit from occasional telephone calls and home visits from community health workers or engagement with the telemedicine tools. The CHECK program assigns participants to a risk tier (high, medium, or low) based on the number of ED visits and inpatient hospitalizations they have had in the previous 12 months.⁵ These risk tiers are intended to help care coordination staff target their efforts to participants who are most in need of program support.

All community health workers receive training on engaging patients and coordinating care. In addition, the CHECK program is developing care coordination protocols for managing the four targeted conditions (asthma, diabetes, prematurity, and sickle cell disease) as well as for oral disease and mental health promotion. The program developed online versions of these materials and also offers disease-specific training for a subset of the CHECK community health workers. Community health workers who receive training on a specific targeted condition will then specialize in providing coordination and support to participants with that condition.

Secondary component: mental health and oral health services. Recognizing that all participants may benefit from access to mental health and oral health services regardless of which targeted condition they have, the CHECK program provides direct services to address these needs. The program's mental health promotion team offers assessment and web-based, small group, and individual brief intervention to participants and their families based on their need for mental health services. CHECK staff refer participants or families in need of longer term services to external mental health providers. Community health workers also provide families with DVDs that include parenting tips for different developmental phases (the DVDs include, for example, "Happiest Baby on the Block" and "Strengthening Families"). In addition to direct mental health promotion, the program also plans to partner with a mobile oral health services provider (Mobile Care Foundation) to connect participants to oral health services.

Secondary component: telemedicine. The CHECK program offers disease-specific online portals in which participants and their families can access self-education resources at any time. CHECK staff are also implementing a care coordination texting program called MyTapp

⁵ The CHECK program categorizes participants with no ED visits and no inpatient hospitalizations in the last year as low risk; one to three ED visits or one inpatient hospitalization in the last year as medium risk; and more than three ED visits or more than one inpatient hospitalization in the last year as high risk.

(developed by the Institute for Health Research and Policy, associated with the university) to provide participants with support about disease-specific goals, remind participants about appointments, and send participants information about social services. At the time of the site visit, one of the CHECK program's five care coordination teams was piloting the texting program with participants. In addition, the mental health promotion team is testing a HIPAA-compliant video chat application (VSEE) for mental health sessions.

Secondary component: health information technology. The CHECK program's care coordination software, Clear Tec Solutions Consensus Software, supports all care coordination components. The software contains initial participant assessments, generates a care plan and recommended follow-up actions based on responses to assessment questions, and enables staff to track participant engagement in care. In addition, the software incorporates an online directory of community and social service providers (called Purple Binder) to help CHECK staff identify and refer participants to these resources.

b. Facilitators

Several factors facilitated the University of Illinois' implementation of the CHECK program:

- **The CHECK program leverages existing institutional resources and expertise within the university to develop supporting components.** The CHECK program draws on resources and expertise within the university system to implement its care coordination program. For example, CHECK staff identified a team of subspecialty medical directors from within the University of Illinois to develop best practices and training for providers, as well as to inform the development of disease-specific care coordination training for community health workers who will specialize in the targeted conditions. CHECK staff also work with the Midwest Latino Center at the university's Jane Addams College of Social Work to develop these care coordination protocols and provide staff training. In addition, university researchers developed some of the program's telemedicine tools, such as the care coordination texting program. Some key program staff also have experience using telemedicine tools and conducting focus groups to understand patient perspectives on these tools.
- **The need for the CHECK program is widely recognized and, as a result, families and other service agencies have readily endorsed the program.** The CHECK program is designed to target children and adolescents who have chronic conditions common among poor and minority populations. CHECK staff have differentiated their program from other care coordination provided by managed care plans or community health center networks. The CHECK program is not strictly a clinical care coordination program; rather, it is heavily focused on coordinating participants and families' social service needs. In interviews, nearly

"We are talking about a population that really needs more community-centered resources to help them get better. It is more about advocating for them, helping get things for their kids, and getting families involved in their child's care."

— A subspecialty medical director

all community health workers emphasized that the program helps to meet participants' significant needs for social and community services and highlighted the program's Purple Binder technology as a critical resource to meet these needs. Staff on the frontlines and at the administrative level see the program as providing unique and necessary services for participants. As one program leader noted, "Not a lot of folks know how to work with this population and the Medicaid department and the [managed care organizations] here are recognizing they need to create partnerships with groups like CHECK to be able to work with this population."

"This [award] was given for us to help these people, and they need to be helped. They're not asking because they want it; they need it. They were targeted for a specific reason and we owe it as community health workers, [care coordinators], or whatever else, to use every resource that we have professionally to make that happen."

— CHECK community health worker

- **Personal commitment of CHECK staff facilitates implementation progress.** Staff at all levels described strong personal commitment to the program's goals and dedication to serving the targeted population. In particular, many staff highlighted the community health workers' dedication to the program and its participants as a key factor in the program's ability to successfully engage participants. Administrative and frontline

staff view community health workers as the face of the CHECK program in the community. The community health workers' ability to succeed in this role is facilitated by their personal characteristics and their experience. Many community health workers are from the communities in which they work or have connections to the targeted conditions through personal experience or through family members. As one community health worker put it, "A community health worker, to me, is not really a title. It's sort of a way of life."

c. Barriers and solutions

CHECK staff identified several barriers to implementation during the program's first year and adapted their strategies to address these challenges:

- **The CHECK program struggled to assess, engage, and activate enrolled participants while developing its workforce and technology infrastructure.** As described above, the CHECK program experienced delays in hiring key staff and executing contracts due to burdensome university and state regulations. As a result, CHECK did not have adequate care coordination staffing or technology support during much of the first year of implementation. As the program began enrolling participants identified through claims data, care coordination teams developed their own ad hoc documentation strategies in absence of the anticipated care coordination software. Care coordination staff also struggled to define their roles and prioritize their workloads. For example, community health workers lacked consistent guidance on how to balance the need to conduct initial assessments for newly enrolled participants with the need to follow up with existing participants who had already completed assessments and had care plans. The CHECK program recently hired a director of care coordination, who is working to standardize operations across the five care coordination teams.

- **Complications with rolling out new care coordination software posed a barrier to participant engagement and activation.** Although the new care coordination software went live in August 2015, care coordination staff reported that it is not yet functioning as intended (for example, they need to manually enter participant information that is supposed to populate automatically). As a result, care coordination staff continued to use other forms of documentation such as Excel worksheets to track their activities, in addition to entering the required information in the care coordination software—resulting in significant documentation burden. Some care coordination staff estimated that they currently spend 70 percent of their time on documentation and posited that they would dedicate only 25 percent of their time to documentation if the software was operating as intended. Despite these challenges, many frontline and administrative staff are enthusiastic about the potential of the software to support care coordination and participant engagement. Program leaders explained that addressing these technology challenges is a top priority. One program leader described the new Consensus software as “the engine that’s going to drive our care coordination program.”
- **The target population is difficult to find and engage.** Care coordination staff reported great difficulty finding and engaging participants. Many frontline staff described the participant population as mobile—that is, frequently changing phone numbers and addresses. Moreover, participants’ families may be wary of the program’s outreach, particularly if the family is concerned about government intervention in their lives (for example, the family may worry that CHECK staff are from an immigration or child welfare agency). In interviews, program staff also highlighted the fragmented Medicaid managed care environment as another barrier to engaging participants. As noted above, the program is only able to serve participants who are enrolled in managed care plans that have contracted with the CHECK program. Because participants can switch plans on a monthly basis, staff often reach out to participants who are no longer enrolled in an approved health plan by the time they are contacted. The CHECK team hopes to secure contracts with additional managed care plans to capture participants who have switched plans. In addition, CHECK is working to identify the most effective strategies for engaging enrolled participants by examining, for example, which types of community health worker communications most often result in successful outreach. The CHECK program has already adapted its model to meet observed participant needs by shifting some care coordination staff to evening or weekend shifts, when they may be more likely to reach people. The CHECK program is also continuing to refine its branding and messaging to the community and promoting the program at community events, with the intention of “mak[ing] CHECK a household name.”

In the coming months, program leaders expect the CHECK program to formalize partnerships with additional community- and school-based health center networks and to begin to implement the CHECK program within health centers already serving CHECK participants. The care coordination leaders and frontline staff will continue to work together to define staff roles, prioritize responsibilities, and identify the best strategies for engaging hard-to-reach participants. CHECK staff also expect to improve the care coordination software’s functionality and increase its connectivity to other sources of participant data (for example, an admissions, discharges, and

transfers feed through the Medical Home Network, which provides alerts from at least nine hospitals in the Chicago area) and to expand use of the program's telemedicine tools to more participants.

3. How does the awardee make decisions about program-related changes?

The University of Illinois is using its care coordination software to track participant use of CHECK services. The university plans to use these data to improve the CHECK program. For example, CHECK program leaders run reports in the Consensus software to track enrollment; assessments; care plans; touches (for example, two-way phone calls, text messages, home visits); and open tasks. The executive committee uses these reports in weekly meetings to assess implementation progress. The program's new director of care coordination is also implementing a documentation system to track the amount of time that community health workers spend reaching out to newly enrolled participants and attempting to engage and follow up with existing participants in the hopes of identifying realistic expectations for their workload. In addition, CHECK staff expect to use program data to promote continuous improvement for the duration of the cooperative agreement. For example, the program is tracking participants' use of the MyTapp texting application during the pilot phase to determine the broader rollout of the application. Ultimately, program leaders hope to use program data to determine which CHECK services best meet the needs of participants with different targeted conditions.

CHECK staff also intend to gather feedback through a text message survey on participants' awareness of the program, the services they have received, and their satisfaction with the program. Program staff expect to field this survey using the text messaging application. They hope to reach 5 percent of enrolled participants by the end of the cooperative agreement. The CHECK program does not have a formal mechanism for collecting provider and frontline staff feedback on the program; however, the director of care coordination is soliciting feedback from the care coordination staff. She holds monthly meetings with the care coordinators and plans to initiate similar meetings with community health workers to discuss their questions and concerns. In addition to staff and participant feedback, the CHECK program receives input from its parent and community advisory boards. The CHECK program convenes these board meetings approximately quarterly to identify additional community needs and to inform the program's policies and procedures.

During the first year of implementation, the University of Illinois received technical assistance from the implementation and monitoring contractor to increase participant engagement in the CHECK program. Program leaders described this technical assistance as support for figuring out how to move from having so many enrolled participants in the database to actually completing the assessments and activating the participants in care coordination and other supporting components. As a result of this assistance, the awardee is looking into hiring Clear Tec Solutions (which developed the Consensus software) to provide additional workforce support for two months to help the CHECK program conduct initial assessments for its enrolled participants. This support would allow the CHECK care coordination staff to focus their efforts on engaging participants in order to address the needs identified in the initial assessments.

Program leaders also noted that they were working with the implementation and monitoring contractor to determine targets for the delivery of oral health and mental health promotion services so that those teams will have benchmarks to work toward.

4. To what extent has the awardee begun to plan for or implement payment reforms?

The University of Illinois originally planned to negotiate with the Illinois Medicaid agency on a fully capitated payment model to sustain all medical and nonmedical services. However, program administrators no longer plan to pursue this course due to the changes in the state Medicaid environment and political landscape.

They now expect to develop a suite of CHECK products for purchase by managed care organizations with associated per member per month fees to sustain the CHECK program past the cooperative agreement. For example, some managed care organizations may wish to purchase CHECK care coordination, mental health promotion services, software, and

consumer-facing technology; others may limit their purchase to only one product. The awardee will establish the details of this plan after further implementing the program and assessing the costs and associated savings of delivering the various program components.

“It’s not necessarily a bad thing that we’re being forced to work directly with the managed care plans, because in a few years we will have a track record of working with them. It takes a lot of time and it’s added a lot of work but it means we’re building something that could be better in the long-term in terms of sustainability for the program.”

— CHECK program leader

CHECK program leaders note that this per member per month plan aligns with the state Medicaid agency’s approach to other care coordination programs within the state (known as Care Coordination Entities). As described above, the CHECK program is currently working to formalize relationships with additional managed care plans. Program leaders hope these relationships will generate interest in purchasing the CHECK suite after the end of the cooperative agreement.

D. Impact Evaluability Assessment

After reviewing information in program documents and from interviews with program staff, we concluded that an impact evaluation was feasible. Although the CHECK program has experienced enrollment and implementation delays and there are some components of CHECK that have not fully rolled out, we believe it will be possible to apply either a pre-post design or a difference-in-differences design—or both, as appropriate—to estimate the program’s effects on key outcomes of interest. The university will provide us with pre-intervention and post-intervention Medicaid claims data for CHECK participants. We have two potential strategies to identify a comparison group. The first would use the data provided by the University of Illinois to create a comparison group from CHECK enrollees who did not reach activated status (that is, they never had a care plan or received ongoing CHECK services). For the second approach, we would acquire pre-intervention and post-intervention Medicaid claims data directly from Illinois state, then draw from a group of beneficiaries who live in an Illinois county outside of Cook County who have similar characteristics to the program’s activated participants. We will choose the first strategy if we do not detect systematic differences between nonactivated and activated

participants that would preclude the nonactivated participants from making an adequate comparison group; otherwise, we will pursue the second strategy. Given the anticipated size of the analytic sample, Mathematica will have enough statistical power to detect expected overall effects for key outcomes such as likelihood of hospitalization, likelihood of an ED visit, and 30-day unplanned readmissions rate.

E. Next steps

We look forward to continuing to work with the University of Illinois for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

We recently executed a business associate agreement and memorandum of understanding with the University of Illinois. We are working together to determine the process by which we will access claims data collected by the awardee. As we access CHECK data and, if necessary, move forward with acquiring Medicaid claims data for Illinois, the next step will be to determine whether it is feasible to identify a comparison group from among nonactivated CHECK participants. If this option proves to be unfeasible, then we will assess the feasibility of identifying a comparison group from among beneficiaries outside of Cook County. For these processes, we will clean and process the pre-intervention and post-intervention data. Once a strategy has been identified as feasible, we will initiate baseline equivalence analyses—focused mostly on descriptive statistics that will be reported in forthcoming quarterly reports. These preliminary analyses will also permit us to determine the quality of the data and explore techniques that would maximize balance between the CHECK participants and comparison patients. Depending upon data availability, we will advance from descriptive statistics to preliminary impact estimates. We will provide a description and discussion of these findings in future reports.

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APPENDIX B.33

REGENTS OF THE UNIVERSITY OF MICHIGAN

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REPORT

APPENDIX B.33

HCIA Round Two Evaluation: Regents of the University of Michigan

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 23, 2015)

Successes

- The Michigan Surgical and Health Optimization Program (MSHOP) has enrolled 561 participants, the vast majority at its University of Michigan Health System (UMHS) site. In addition, MSHOP has recruited the targeted number of hospitals for its first year and appears to be ahead of its initial goals in recruiting additional hospitals in the second year.
- Respondents reported that they believe in the value of prehabilitation to improve quality of care and find the program easy to understand.

Challenges and strategies to address them

- Participant enrollment in the expansion sites has been minimal and far below initial expectations. Ongoing challenges include difficulty securing effective surgeon leadership at practices, introducing new workflows at practices, and changing surgeons' habits.
- To address these challenges, MSHOP allowed variation in implementation across sites and created a pilot program within MSHOP. Under the pilot, to be implemented at a single site, surgeons will not use the risk assessment tool and the definition of eligible participants will be expanded beyond those scheduled for the original 13 types of abdominal surgery to all general surgery patients. MSHOP will be implemented concurrently at all other participating sites without these modifications.

Lessons learned

- MSHOP learned that it takes time to recruit hospitals to participate and complete the necessary Institutional Review Board (IRB) and Data Use Agreement (DUA) paperwork. It is trying to recruit all 40 hospitals by the end of Year 2, rather than the earlier goal of recruiting the 40 hospitals by Year 3, to increase the total number of MSHOP participants.
- MSHOP has learned that it needs to work with practices to tailor workflow changes to individual practices' and hospitals' needs and circumstances. One approach does not work for all.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 23, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Michigan Surgical and Health Optimization Program (MSHOP), which is being implemented by the Regents of the University of Michigan. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the University of Michigan's MSHOP, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to the University of Michigan Health System (UMHS)¹ and other implementing sites, and a review of the University of Michigan's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the University of Michigan's program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?

¹ UMHS is both an implementing site and the location for the MSHOP leaders.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of the University of Michigan's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

MSHOP involves surgeons and their outpatient office staff (nurses, operating room schedulers, prehabilitation clinic staff, and so on). Surgeons or their staff use a risk assessment tool on mobile devices or laptops at the point of referral or surgical consult for abdominal or other general surgery to assess participants' risks for poor surgical outcomes. If medically appropriate, the surgeons or staff members ask patients to participate in a "prehabilitation" program—which includes pre-operative cardiovascular and respiratory exercises, as well as receipt of information on smoking cessation, nutrition education, and stress reduction. Participants have the option of receiving a daily automated telephone call, text, or weekly email that prompts them to report on their activities, such as the number of steps walked per day. Participants who opt for the automated calls or texts are able to log their activities using the keys on their telephone while those opting for email enter their information directly into the patient tracker, which is a website that enables them to enter and monitor their progress during the program. This data automatically feeds into a patient database. Surgeons and surgical staff use the patient database to monitor participants' activity levels and progress in the program, and to provide encouragement to them. The web-based tool includes the risk assessment tool, patient tracker, and patient database. Section F shows a sample risk assessment tool and patient tracker.

The program targets individuals at participating hospitals who (1) are scheduled for major abdominal or other general surgery, (2) are at high risk for poor outcomes, and (3) have at least a two-week interval between MSHOP enrollment and their surgery date. MSHOP first started at University of Michigan Hospital (the flagship hospital of UMHS) four years ago. Under the HCIA R2 award, UMHS is gradually expanding the program to 39 other hospitals by the third year. The awardee hypothesizes that participation in the prehabilitation program will lead to fewer surgical complications and will reduce the length of inpatient hospital stays after surgery, both of which will lower costs. Other key characteristics of MSHOP are described in Table 1.

Table 1. University of Michigan: MSHOP characteristics at a glance

Program characteristic	Description
Purpose	Surgeons and their teams use a web-based tool on physicians' mobile devices or computers at the point of referral or surgical consult for abdominal (or other general) surgery to assess participants' risks for poor outcomes and, if medically appropriate, to engage them in a "prehabilitation" program.
Components	Quality improvement and process redesign (primary), health information technology (secondary), and patient and family engagement (secondary)
Target population	Individuals at participating hospitals who: <ul style="list-style-type: none"> • Are scheduled for major abdominal (or other general) surgery, • Are scored as high risk for poor outcomes, and • Have at least two weeks between MSHOP enrollment and the surgery date.
Theory of change/theory of action	The awardee hypothesizes that participation in the prehabilitation program will lead to fewer surgical complications and will reduce the length of inpatient hospital stays after surgery, both of which will lower costs.
Payment model	Shared savings Pay for implementation
Award amount	\$6,389,850.00
Launch date ^a	September 15, 2014
Setting	Surgical practices
Market area	A mix of urban and suburban
Market location	Michigan
Core outcomes	MSHOP's goals for its target population are to reduce: <ul style="list-style-type: none"> • The length of inpatient hospital stays by 2.3 days per case, • The inpatient cost-of-care payments to hospital by \$2,561 per case, and • Surgical complications by 10 percent (These goals reflect the savings demonstrated at UMHS during a pilot of this program.)

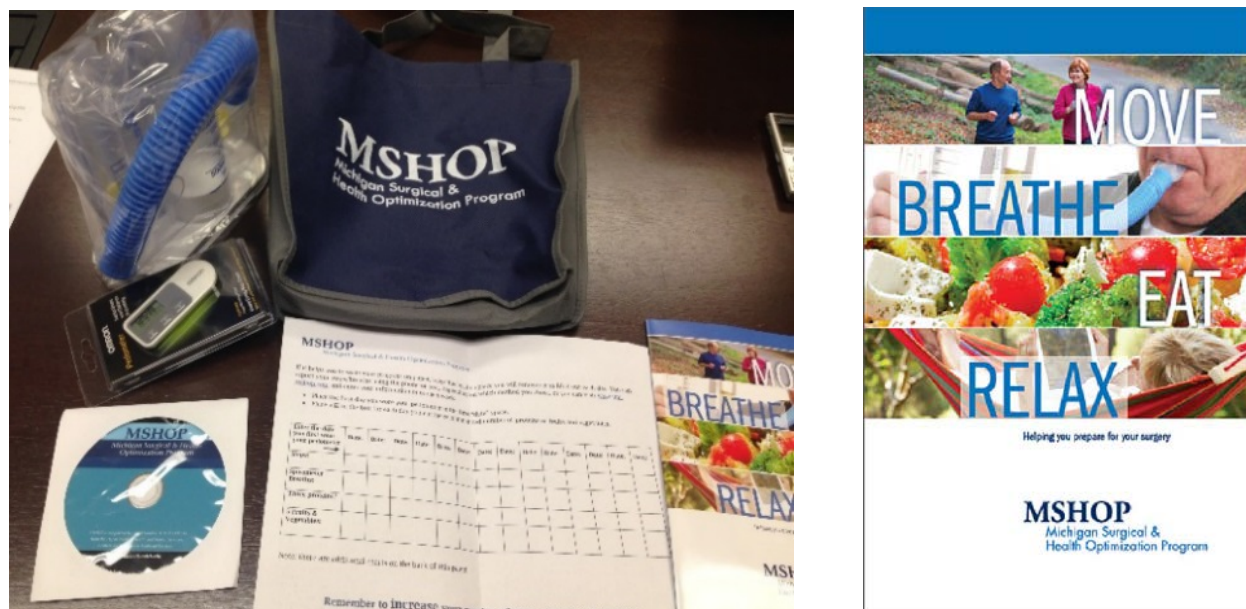
^aAfter a planning period, the awardee's program became operational as of this date.

MSHOP has three key components. First, it seeks to change the process of care for surgical patients by encouraging them to engage in "prehabilitation" activities before surgery. Prehabilitation activities consist of breathing exercises and smoking cessation to strengthen the lungs, walking more, eating healthfully, and managing stress. Second, it introduces new health information technology (IT) to enable surgeons and their staff to efficiently assess patients' relative risk of poor surgical outcomes, enroll participants in the program, and track their progress in their walking and breathing exercises. The health IT also allows participants to enter information about their progress themselves. Third, MSHOP engages participants (and their families) in their care by encouraging participants to do these prehabilitation activities.

MSHOP's implementation process begins with recruiting hospitals and their surgeons to participate as implementing sites. During recruitment, MSHOP leaders meet in person with hospital leaders to give them a detailed introduction to the program. Further meetings with individual surgeons and frontline staff (that is, staff in surgeons' outpatient practices and prehabilitation clinic staff) may be required to obtain buy-in to the program. MSHOP staff then work with clinical and frontline staff to guide and assist them in implementing the program.

Participant enrollment is initiated by the hospital's surgeons and their support staff. During initial office consultations with individuals who are candidates for major abdominal or other general surgery, surgeons (or in some cases, nurses) use MSHOP's risk assessment tool to determine patients' suitability for the program. Generally, people who score above 50 on the risk assessment tool are considered high risk for poor surgical outcomes and are invited to enroll in the program. (At the UMHS site, if a patient receives a score indicating low risk, but the surgeon believes there are factors not included in the risk tool that increase the patient's likelihood of poor surgical outcomes, the surgeon may refer the patient to the program.) Staff then describe the program to participants and give them an MSHOP kit that includes a pedometer and a spirometer, as well as a CD and written material that further explain the program and how to track their exercise progress (Figure 1). See Section F for sample views of the risk assessment tool and the patient tracker.

Figure 1. MSHOP kit and patient education brochure



Source: Site visit conducted in October 2015.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by the University of Michigan to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and our site visit to UMHS and other implementing sites from October 21 to 23, 2015. For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed MSHOP leaders at UMHS in Ann Arbor, Michigan, and surgeons and frontline staff in surgical practices affiliated with St. Joseph Mercy Hospital in Pontiac, Michigan, and Allegiance Health Hospital in Jackson, Michigan. We also spoke by telephone with a site coordinator at Munson Medical Center in Traverse City, Michigan. We selected these sites because, at the time of our visit, they were the only ones participating in MSHOP.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training, achieved interrater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified above. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this report on the University of Michigan's MSHOP implementation experience.

C. Findings

1. How effectively has the program been implemented?

MSHOP leaders recruited the targeted number of hospitals for the first year (three) and is ahead of the program's recruitment goal for hospitals for the second year. However, due to initial delays in launching the program and challenges after the launch, participant enrollment has been minimal and far below initial expectations in the expansion sites.

Overall, MSHOP enrolled 561 participants during the first year, but the overwhelming majority of these participants were enrolled at the UMHS site. MSHOP leaders initially anticipated that participants would be more evenly spread across the implementing sites. Looking specifically at direct and indirect participants (MSHOP defines direct participants as those who have either Medicare or Medicaid as their primary insurance and indirect participants as those who do not), MSHOP did not meet its direct participant enrollment goal for the first year but exceeded its indirect participant enrollment goal, according to the reports prepared by the implementation and monitoring contractor (Figure 2). For direct program participants, MSHOP met 95 percent of its target projection for the first year of the award, serving 357 direct program

participants. For indirect program participants, the program achieved 162 percent of its target projection for the first year of the award, serving 204 indirect program participants.²

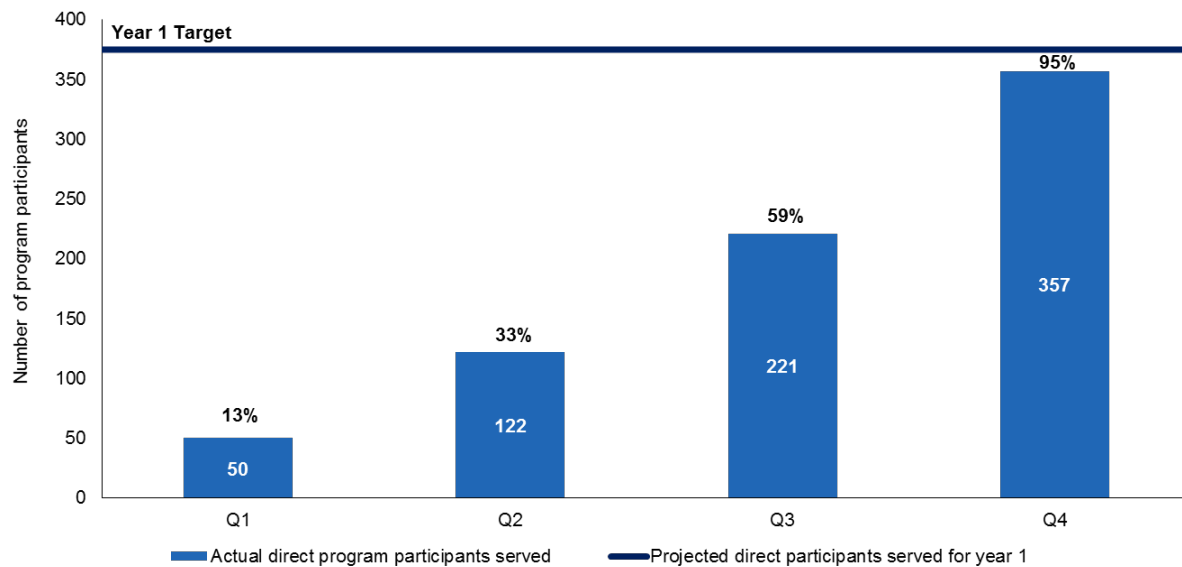
One of the key factors delaying implementation was the slower-than-expected development of the risk assessment tool. The risk assessment tool was not ready for use until June 2015, (8.5 months after program launch), which, in turn, delayed training of the implementing sites. Ongoing challenges (discussed in detail below) include difficulty securing effective surgeon leadership at practices, introducing new workflows at practices, and delays in obtaining Institutional Review Board (IRB) approval and data use agreements (DUAs). Accordingly, MSHOP leaders made three key changes to implementation:

- **Allowed variation in implementation at sites.** For example, at the UMHS site, because surgeons perceived that the risk assessment tool introduces an unnecessary and burdensome step in patient care, surgeons and staff are not required to use it at enrollment and are enrolling both high- and low-risk participants. (UMHS staff are instead retrospectively scoring patients with the risk assessment tool.) In addition, they enroll participants who are undergoing a broader range of surgeries (especially thoracic) than the targeted 13 surgery types. At another implementing site, staff had already been giving patients a pre-operative kit of supplies very similar to MSHOP's, so MSHOP provided patients with only the two items not already in the site's existing kit—the pedometer and access to the patient tracker—rather than the full MSHOP kit.
- **Created a pilot to address lagging enrollment.** Under the pilot, to be conducted at a single expansion site, surgeons will not use the risk assessment tool and the definition of eligible participants will be expanded beyond those scheduled for the original 13 types of abdominal surgery to all general surgery patients. MSHOP will be implemented concurrently at all other participating sites without these modifications.
- **Approached hospitals and practices sooner than originally planned.** MSHOP leaders learned that it takes more time than they had anticipated to recruit hospitals to participate and to complete the necessary IRB and DUA paperwork. They are trying to recruit the target number of hospitals by the end of Year 2, rather than by Year 3 as originally planned, to increase the total number of MSHOP participants.

It should also be noted that the UMHS site provides additional services (such as tobacco cessation counseling/support groups and the provision of a nutritional supplement such as Ensure to malnourished participants) to MSHOP participants that are not necessarily provided at other sites.

² We use the awardee's definition to report direct and indirect participants in this narrative. The awardee defines direct participants as those who have either Medicare or Medicaid as their primary insurance, and indirect participants as those who do not. However, Mathematica defines direct participants as individuals who receive care or services paid for by HCIA R2 program funding, and indirect as those who receive services that are paid for by sources other than HCIA R2 funding.

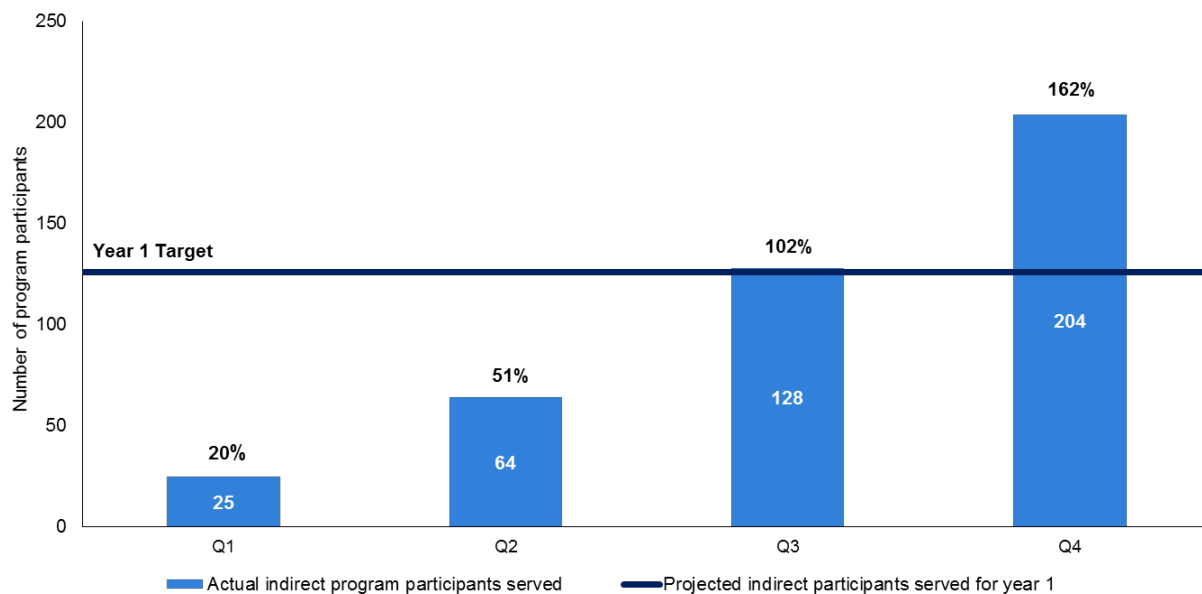
Figure 2a. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. MSHOP defines direct participants as those participants served from program launch through the fourth program quarter who have either Medicare or Medicaid as their primary insurance.

Figure 2b. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. MSHOP defines indirect program participants as those participants served from program launch through the fourth program quarter who do not have either Medicare or Medicaid as their primary insurance.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The three primary components discussed below are intertwined. The first component is process redesign: encouraging patients to engage in prehabilitation, stop smoking, and improve their nutrition before surgery. The second component is the introduction of new health IT, which facilitates the implementation of the process redesign by helping surgical practices efficiently identify the most at-risk participants and automatically sending reminders to participants about exercising and healthy behavior. The third component is greater patient engagement, which is expected as patients are introduced to the importance of prehabilitation and receive tools (such as a pedometer and spirometer) to promote their engagement and help them feel empowered to influence the outcome of their surgery. Below we discuss the facilitators and challenges for each of these components of the program, as well as strategies to address them.

a. Primary component: quality improvement and process redesign

Respondents report that they believe in the value of prehabilitation to improve quality of care and find the program easy to understand. One surgeon said it takes only 90 seconds for him to describe the program, and noted that a lot of patient information can be entered in the risk assessment tool before seeing the patient. Staff at one practice reported that giving patients the kit and explaining the contents and tracker takes about 6 to 7 minutes.

"They [participants] can even look online and see their progress and I can look online and track the patient that's in the program and see how they're doing. I think, once they get used to it, it's really encouraging."

— Administrator

In contrast, however, UMHS surgeons have generally been unwilling to use the risk assessment tool. MSHOP leaders attribute this resistance to surgeons finding that all their patients could benefit from enrolling in MSHOP, they could identify high-risk patients without a tool, and/or the risk assessment tool added burden during patient visits. The surgeons' perspective may be influenced by the fact that they were first introduced to the program before the development of the risk-assessment tool (and before the HCIA R2 award).

Having an engaged surgeon champion at implementing sites can facilitate adoption, but engagement of champions varies. Staff at one practice noted that their surgeon champion drove buy-in by actively promoting innovation, often sending emails encouraging staff to use the web-based tool to assess patients' risk. At another practice, the intended surgeon champion recently left, leaving the practice without someone to drive program adoption. The surgeon champion in a third practice indicated that he had been assigned the leadership role by hospital leaders and has struggled to make it a priority among many others competing for his attention.

Several respondents noted that buy-in from the office manager and clinic staff is key to making necessary workflow adjustments. One practice manager has had to adjust the flow of patients through office visits to accommodate MSHOP because (1) patients now occupy rooms

for more time, and (2) staff have additional responsibilities to implement the program. For example, nurses and medical assistants must often remind surgeons of the program and are responsible for introducing participants to the kit. In addition, administrative staff who schedule surgeries may need to enroll participants in the tracker. In addition to space and staff time adjustments, office staff have also adjusted other aspects of practice routine, such as scheduling surgeries while patients are in the office and ordering iPads so that surgeons can conduct the risk assessment in exam rooms.

Drawing upon a state surgical quality collaborative and its network of surgeons has helped introduce MSHOP to surgical leaders, but has not always been as effective as hoped. Since 2005, Michigan has had a statewide collaborative of hospitals called the Michigan Surgical Quality Collaborative (MSQC).³ MSHOP has leveraged the MSQC and its designated surgeon champions who are associated with hospitals throughout the state, to help promote participation in MSHOP. However, some MSQC surgeon champions have not been in a position to spearhead their practices' adoption of the program and have had limited ability to encourage other practices to do so. For example, if the adopting practice is not hospital owned, a surgeon champion and staff have to be more tactful in encouraging the practice to implement MSHOP. In addition to surgeon champions, some MSQC-employed nurse data extractors at hospitals throughout the state have been helpful in promoting the program to other practices.

Some hospitals and practices have already implemented similar initiatives, which is both a facilitator and a challenge. A number of hospitals are also implementing all or parts of an international program called Enhanced Recovery After Surgery, which focuses on perioperative care pathways designed to achieve early recovery after surgery. Examples of these pathways include carb-loading before surgery, enhanced attention to pain management, and encouraging patients to ambulate soon after surgery. In addition, the National Surgical Quality Improvement Program (NSQIP) by the American College of Surgeons has a risk assessment tool that applies to a broader array of surgical patients and that some surgeons may prefer. The advantage of working with hospitals and surgeons implementing these or similar programs or tools is that they understand the value of changing the process of care around surgery to improve quality. The challenge is that these hospitals and surgeons may resist insertion of MSHOP into an already redesigned or established process, and doing so may require new solutions and adaptations.

For example, as mentioned above, one hospital already had a pre-operative kit for patients that was similar to MSHOP's kit; this hospital agreed to provide to patients only the MSHOP pedometer and information on the web-based patient tracker, but not the rest of MSHOP's materials. However, staff at this hospital were excited to use the MSHOP automated call/text technology and patient tracker, because their previous prehabilitation program required them to make labor-intensive follow-up phone calls to check on patients' progress with their activities. Other sites may have their own risk assessment technology built into their electronic medical record (EMR), so even if they find other parts of MSHOP's innovation (such as the kits with

³ For more information, please visit <http://www.msqc.org/>.

pedometers and spirometers) appealing, adopting MSHOP's technology may not make sense for them.

Several respondents reported that competing priorities and busy schedules challenged implementing sites' focus on MSHOP.

Surgeons and staff reported that changing their habits during busy days was difficult, particularly remembering to use the risk assessment on potentially eligible patients. One respondent noted that having a low volume of eligible potential participants compounded the challenge of integrating MSHOP into the practice workflow.

Related to this, surgeons generally believed that

expanding MSHOP eligibility criteria to include more than the 13 targeted types of surgeries would benefit more individuals. One administrator/nurse said the original criteria were appropriate.

"It just wasn't necessarily in the forefront of my mind to do it [MSHOP]. Not that I had anything against it or didn't like it. In fact, it was actually very good. I just didn't always say, 'Hey, I should consider this [individual for MSHOP].'"

— Surgeon

In a couple of practices, concurrent changes in staff and operations diminished attention to MSHOP among the surgeons and staff. For example, one practice had turnover of nearly all its staff. Another practice had just launched its own prehabilitation program and wanted to fully implement that before adding MSHOP. This practice also noted that the adoption of ICD-10, staffing changes, and surgeon turnover were barriers to adopting MSHOP.

Workflow variations require the MSHOP team to devote resources to tailoring implementation for many sites. For example, at UMHS the surgeon introduces the program to the patient and the office staff provide kits to patients, but enrolling the patient in the tracker occurs in the prehabilitation clinic. The prehabilitation clinic is also responsible for tracking patients' progress. At other sites, the assessments, enrollment, and tracking occur in the surgeon's office. Furthermore, one site reported that the surgeons in one participating practice had different preferences on when and where to perform the steps in enrollment (that is, completing the risk assessment tool, introducing the prehabilitation kit, and so on), requiring more complicated workflow adjustments.

Even with a strong surgeon champion, practices have experienced delays in receiving IRB approval to participate in the program and securing data use agreements. These delays can dissipate initial enthusiasm for the program among staff and surgeons. Unfortunately, large organizations that are likely to have the most eligible participants also tend to have more bureaucratic hurdles. Strategies to address these challenges include the following:

- **Changing surgeons' (and other providers') habits.** Some staff put sticky notes that say "MSHOP?" on patient charts to prompt surgeons to consider patients' eligibility. Staff at another practice posted a note in a common area listing risk factors (such as obesity and smoking) to help remind staff and surgeons. One site is considering posting a scorecard on how many participants each physician has enrolled in the hope that a little friendly competition will motivate surgeons.

- **Workflow issues.** MSHOP tries not to dictate the exact workflow, recognizing that there are many ways to organize it (such as helping practices develop a streamlined approach to selecting the surgery date, which enables faster enrollment).
- **Lack of staff buy-in.** MSHOP staff planned to retrain staff by walking through the web-based tool and allowing them to use a demonstration version to help them become comfortable with the technology.
- **Activating surgeon champions.** MSHOP developed a brief summary of the expectations for the role (such as being a cheerleader, making sure the program gets implemented and sustained, and spread both “laterally” to other surgeons in the practice and externally to surgeons outside the practice). MSHOP hopes that distributing these expectations to the champions will help them become more effective advocates for and disseminators of MSHOP. In addition, MSHOP recently developed a financial incentive in conjunction with Blue Cross Blue Shield of Michigan (BCBSM) to reward performance (discussed in greater detail below).

b. Secondary component: health IT

MSHOP leaders noted that their key health IT innovation is the automated follow-up encouraging participants to adhere to their exercise plan. The automation facilitates expanding a prehabilitation program to a large population by reducing the staff time required. In addition, the leaders report that patients respond well to the automated reminders, which make them feel more connected to their surgical team. This aspect of the health IT may eclipse the value of the risk assessment tool, which, as mentioned, is not being widely used by UMHS surgeons.

Development of the web-based tool took longer than expected, which delayed implementation of the program. Before this award, UMHS had developed a version of the tool for iPads and iPhones that was not web-based. To spread it to other facilities MSHOP leaders needed to make a web-based version that could also be used with Android phones and desktop and laptop computers. In addition, because of hospital and health system copyrights, they needed to present it as a non-UMHS product, so they had to start their own company, prenovo, to develop and disseminate the tool.⁴ They are considering future modifications to the tool as well as expanding the number of eligible procedures.

The web-based tool is not always reliable and has limitations. According to MSHOP leaders, users can experience intermittent technical difficulties in accessing the tool. In addition, although the tool is compatible with all common Internet browsers, Internet Explorer users must have version 9 or higher for the tool to have full functionality. Some sites have had to upgrade to Internet Explorer 9 but one hospital’s EMR was only compatible with Internet Explorer 8 and so the hospital has to use a different browser to access the MSHOP tool, which adds an extra step to the process. In addition, the web-based tool does not currently connect to EMRs. At UMHS, staff

⁴ For more information, please visit <http://prenovo.com/>.

take a PDF of their risk assessment and add it to patient charts. UMHS is working to embed the tool in its EMR.

c. Secondary component: patient and family engagement

Despite low enrollment, surgeons and clinic staff said that patients generally feel motivated to participate in MSHOP for two reasons. First, people tend to be more open to lifestyle changes once they learn they need surgery in the near future. Many patients are enthusiastic to participate in MSHOP because they want to improve their health to prepare for surgery. In fact, a few surgeons said that patients often ask the surgeon what they can do to prepare for surgery before the surgeon even begins to discuss MSHOP.

Second, some people are motivated to participate in MSHOP after being disappointed with their risk score. Surgeons explained how they walked through the web-based tool with patients during appointments and how patients were particularly dismayed by the mortality risk score (their estimated chance of death within 30 days after surgery). Surgeons said this opened patients' eyes to the importance of healthy habits, especially smoking cessation, and motivated them to participate in MSHOP.

"You describe a litany of risks to patients and they all think that there is a real meaningful chance they could die, but then they see [that] there's a number that says 2 percent [chance of death] in there [the web-based tool]. . . . I think that hits people pretty significantly."

— Surgeon

Interestingly, the required use of technology did not deter people from participating in MSHOP. MSHOP leaders reported that the majority of participants text. One surgeon added that many patients enjoy tracking their progress via the graphs on the participant tracker.

A few potential participants find the program overwhelming given their circumstances. A couple of respondents described patients who found the program overwhelming because their upcoming surgeries were related to recent cancer diagnoses, so they were not emotionally able to think about enrolling in MSHOP during their appointment. To avoid overburdening patients, one surgeon waited until the person's next appointment to introduce the program. In addition, at least one potential participant could not participate because that individual had neither a telephone nor a computer.

3. How do the awardee and implementing sites make decisions about program-related changes?

Leaders of all the HCIA R2 awarded programs need reliable data on program implementation and performance to make decisions on how to improve the program. MSHOP leaders, concerned about low enrollment outside of the UMHS site, are focusing on increasing participant enrollment. MSHOP staff closely monitor data in the enrollment database that is part of their web-based tool, and meet weekly to discuss strategies to increase enrollment. MSHOP also has two committees that advise the program. One committee, which meets monthly, comprises senior members of the team and other senior administrative and medical leaders

within UMHS. A second, higher-level executive committee includes a BCBSM representative, patients, a surgeon, and an implementation scientist, and meets twice a year.

In addition, MSHOP works closely with implementing sites to develop strategies to improve the integration of MSHOP into their workflows, which would result in increased enrollment. For sites that have low enrollment, MSHOP will check in weekly to discuss problems and share solutions used at other sites. MSHOP also continues to take advantage of opportunities to promote its program in conjunction with MSQC calls and conferences.

Discussions about low enrollment within the team and with the advisory committees led the staff to propose conducting the previously described pilot in one facility to test whether waiving use of the risk assessment tool and broadening the range of eligible surgeries would increase enrollment. All other sites will continue to use the risk assessment tool and include only patients who will receive one of 13 specified abdominal surgeries. In addition, staff recognized the need to recruit hospitals and the practices of their affiliated surgeons earlier than they originally envisioned to increase the number of participants.

The awardee is measuring, or plans to measure, the following to examine program performance, conduct program-related quality improvement activities, and assess program impact:

- **Program outputs.** Use of risk assessment tool, patient body mass index, increase in patient activity levels, percentage of eligible cases enrolled in MSHOP, use of tobacco use assessments, percentage of eligible cases that were offered perioperative smoking cessation assistance, and surgeon and patient satisfaction.
- **Program outcomes.** Hospital-wide, all-cause unplanned readmission; pneumonia readmission rate; postoperative sepsis; cost of care for both surgical and nonsurgical patients; and effectiveness of pay for implementation model.
- **Program impacts.** Reduction in surgical complications, reduction in length of stay for high-risk surgical patients in Michigan, and reduction in cost of care for high-risk surgical patients in Michigan.

4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

BCBSM recently agreed to provide separate financial incentives for physician champions (preferably a surgeon, but in some cases, can be a non-surgeon) and surgical practice staff to actively participate in MSHOP. For physician champions to be eligible for an incentive payment, they must recruit other surgeons to participate and use the risk assessment tool. The physician champions are eligible for a \$1,500 premium for each year of participation, paid directly to them. For the team of practice staff at each implementing site, eligibility is based on the percentage of patients actively tracking their physical activity and timeliness of staff responses to MSHOP requests. Payments will be retrospective and will be awarded to each team on a yearly basis. The

team premium (\$5,000 to \$10,000) is initially tiered based on hospital size with an additional tier based on the percentage of eligible participants who are enrolled.

During our site visit, the surgical practices did not have all the details of the payment incentive structure and surgeons indicated that the payment incentive was not a critical factor in motivating them to participate. One administrator and MSHOP leaders noted that the incentive payment would likely be particularly helpful in motivating office staff. In addition, MSHOP leaders observed that the incentive may be more meaningful when it goes to independent practices rather than to a large university system, where it may not trickle down to the practice.

D. Impact evaluability assessment

After reviewing the available information on the University of Michigan's intervention, we have concluded that a rigorous impact analysis is likely feasible (pending a significant acceleration in provider recruitment and participant enrollment) and that the best approach is a difference-in-differences design with an external, matched comparison group and an intent-to-treat approach. We will match participating surgical practices to nonparticipating surgical practices in Michigan (or in adjacent states if we cannot find good comparisons in Michigan), using information available primarily from Medicare administrative files and claims data, as well as proprietary provider- and practice-level information collected by the SK&A Healthcare. The three main challenges to this design are (1) continued low enrollment, (2) small number of comparison hospitals in Michigan, and (3) selection bias due to practices self-selecting into the program. To address the second challenge, we will explore the feasibility of expanding the potential pool of comparison practices to surrounding states. Drawing the counterfactual from hospitals and practices in adjacent states (and thus not eligible for the program) will also help mitigate the potential for selection bias.

E. Next steps

We look forward to continuing to work with the University of Michigan for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include (1) ascertaining the characteristics of the surgical practices that join the program and identifying the pool of potential comparison practices with similar characteristics; (2) identifying all Medicare and Medicaid beneficiaries who receive intervention services and attributing beneficiaries to treatment and comparison group practices in the pre-intervention and intervention periods; (3) comparing baseline characteristics across beneficiaries attributed to the treatment and comparison group practices; and (4) producing initial impact estimates for the first four quarters of program operations, after creating our outcome (both core and awardee-specific) and explanatory variables. Our ability to produce impact estimates will depend critically on continued recruitment of surgical practices and enrollment of patients scheduled to receive major abdominal services.

F. Supplemental materials

This section contains supplemental materials mentioned throughout this narrative and provided by the awardee. Specifically, sample views of the web-based risk assessment tool (Figure 3) and the patient tracker (Figure 4) are shown on the next page.

Figure 3. MSHOP web-based risk assessment tool

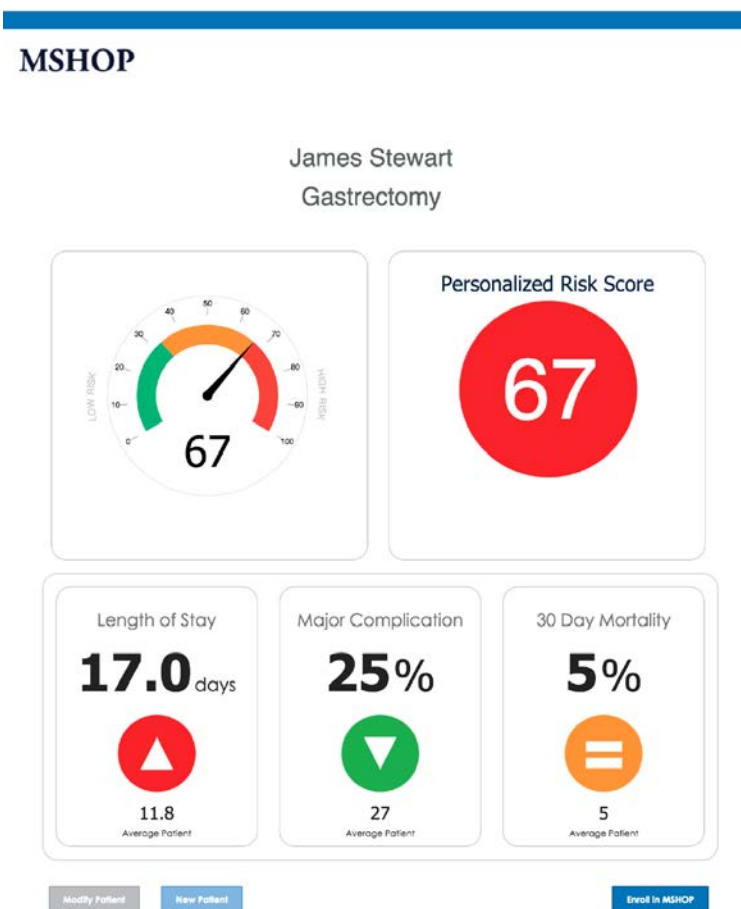
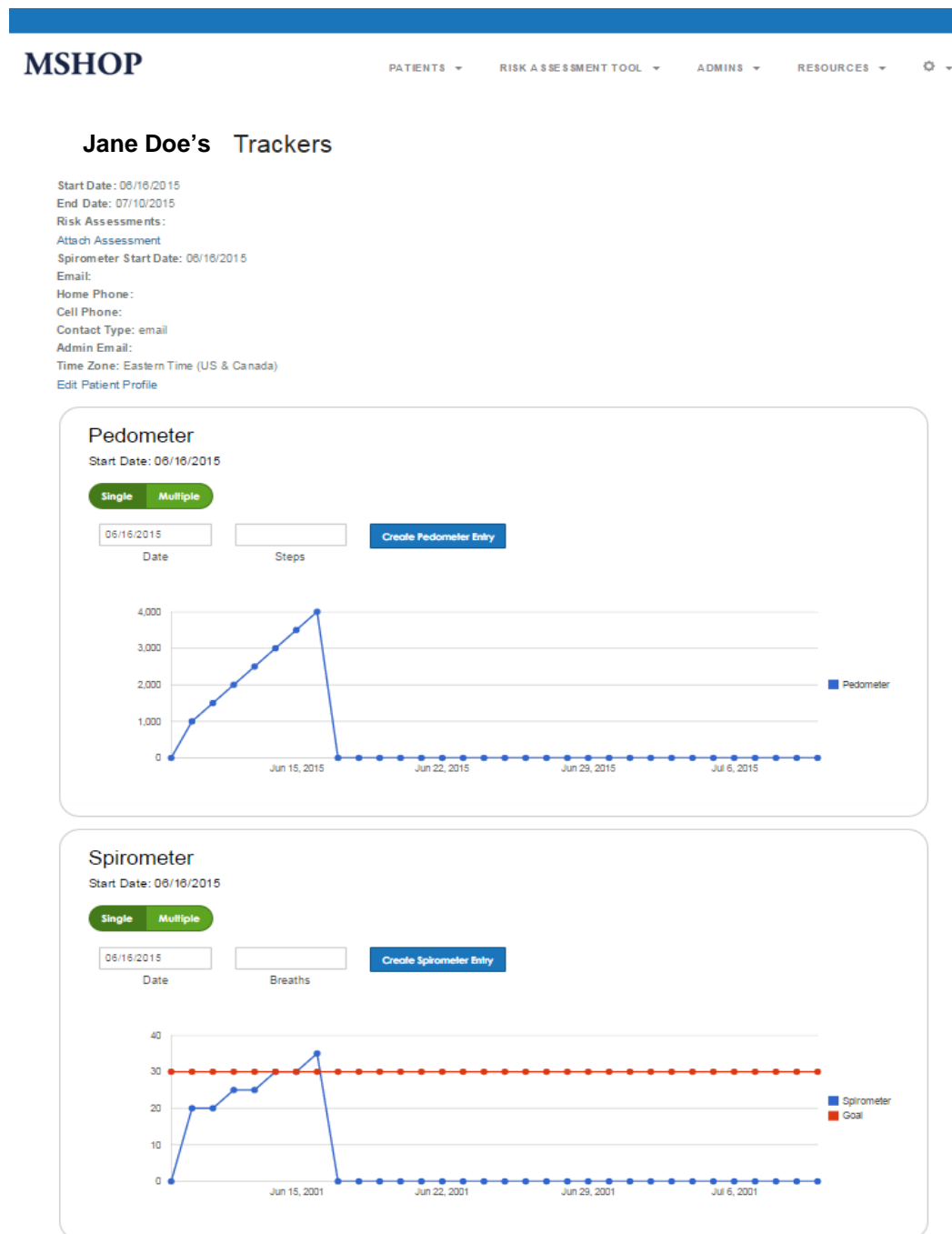


Figure 4. MSHOP patient tracker



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APPENDIX B.34

UNIVERSITY OF NEW MEXICO, HEALTH SCIENCES CENTER

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REPORT

APPENDIX B.34

HCIA Round Two Evaluation: University of New Mexico, Health Sciences Center

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 13, 2015)

Successes

- Three hospitals in rural New Mexico have joined the University of New Mexico's Access to Critical Cerebral Emergency Support Services (ACCESS) program. These hospitals have successfully adopted tele-health consultation technology and trained tele-health coordinators and emergency department staff to use it.
- Patients (67 as of August 2015) are receiving timelier treatment through the tele-health consultation. Hospital staff report greater confidence in prescribing tissue plasminogen activator, which is a lifesaving drug for many stroke patients but can be deadly in cases of brain bleeds.
- Hospital staff have reported that most of these patients would have been transferred to a tertiary center via helicopter if they had not received the tele-health consultation. As helicopter transfers are costly and disruptive for patients and their families, the ACCESS program is lowering health care costs for insurers and patients by reducing transfers.

Challenges and strategies to address them

- Hospitals have been slow to join the ACCESS program. The University of New Mexico had planned to have 30 rural hospitals on board by the end of the award but has adjusted its expectations to 20. Hospitals' barriers to entry include cost and the lengthy process to credential specialists who provide the consultations.
- Because the HCIA R2 cooperative agreement covers only individuals who are insured through Medicare and Medicaid, hospitals are expected to pay the consultation fee for privately insured and uninsured patients. Hospitals that are struggling financially are hesitant to take on this burden. To address this, the University of New Mexico is helping hospitals understand that treating more Medicare and Medicaid patients locally will offset the consultation fee for those who are privately insured or uninsured.
- Rural hospitals must credential all ACCESS neurologists and neurosurgeons who might provide a consultation. To streamline this lengthy process, the University of New Mexico has developed a "how to" guide and has been working closely with hospital administrative staff to move the process forward.

Lessons learned

- Independent hospitals' nimble decision making and administrative processes allow them to join the program more quickly than hospitals within large health care systems.
- Financially stable hospitals are more willing than less stable hospitals to join the program because they can cover the consultation fees not supported by the cooperative agreement.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through our last site visit interview on October 13, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round 2 of the Health Care Innovation Awards (HCIA) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Access to Critical Cerebral Emergency Support Services (ACCESS) program, which is being implemented by the University of New Mexico, Health Sciences Center. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the University of New Mexico's ACCESS program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during a site visit to New Mexico; and a review of ACCESS reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the ACCESS program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of the ACCESS program's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The University of New Mexico obtained an HCIA R2 cooperative agreement to create the ACCESS program, which provides tele-health consultation services to rural hospitals in New Mexico that treat patients with neuro-emergent conditions who present in the emergency department (ED). The program serves adults insured through Medicaid or Medicare; hospitals must cover the consultation fee to provide services for privately insured or uninsured patients. The cost of the consultation ranges from \$600 to \$1,200, depending on its type, time of day, and duration. The ACCESS program was launched May 4, 2015.

The ACCESS program grew out of observations by the University of New Mexico hospital staff that many patients with neuro-emergent conditions were being unnecessarily transferred from their local hospitals to the University of New Mexico—the state's only Level I trauma, tertiary care provider—at great time and expense (\$25,000 to \$40,000 per transfer). The ACCESS program supports local hospitals in effectively treating patients with neuro-emergent conditions, often avoiding unnecessary and costly transfers, which results in cost savings for the overall health care system.

The ACCESS program also provides effective and timely treatment. For example, with the tele-health consultation, ED staff in participating hospitals have reported increased confidence in administering tissue plasminogen activator (tPA), the only treatment for ischemic strokes approved by the U.S. Food and Drug Administration. The treatment is lifesaving when administered within three hours to stroke patients for whom no bleeding is evident through a computerized tomography scan (CT scan); however, it can be deadly when blood is evident in the scan. The ACCESS program allows treating physicians to gain quick access to experts so

"I can send them to Albuquerque, fly them for \$20,000, \$30,000. . . . It's not really a waste because you thought you were doing the right thing, but very, very expensive use of those resources, which are limited anyway. . . . We transfer one of them to Albuquerque, who's going to visit them? And who's going to bring them home? Here the patients know the nurses personally. . . . They feel safe here."

—Participating tele-health coordinator

as to determine the appropriateness of administering tPA, thereby increasing its usage with eligible patients and minimizing delays.

The University of New Mexico's theory of change or theory of action (TOC/TOA) is that tele-health consultations will decrease the time it takes for an individual to receive a treatment recommendation from a specialist, decrease unnecessary transfers, improve physician confidence in treatment decisions, and improve patients' satisfaction because they are being treated closer to home. In turn, the access to specialty care, provided locally through tele-health, will result in better health outcomes and lower health care costs. To achieve the desired results, the ACCESS program has two phases: (1) recruiting rural hospitals and (2) providing the tele-health consultations. As part of its recruiting process, the ACCESS program first educates hospitals about program benefits through professional conferences, videoconferences, and written materials. Hospitals that agree to participate sign a contract with the University of New Mexico and credential all neurologists and neurosurgeons affiliated with the ACCESS program so that they can legally treat the hospital's patients via the tele-health technology. Hospitals also assign or hire a tele-health coordinator (THC) to act as a liaison between the ACCESS program and the hospital, and to manage the evaluation component of the program. ACCESS nurse educators then visit the hospital to assess local capacity and identify the types of neuro-emergent conditions that would be treated locally or transferred to a tertiary center. The ACCESS program provides hospitals with the tele-health consultation technology, which consists of two mobile carts equipped with video monitors and eye scanners. The technology's developer, Net Medical Xpress (NMXS), and a nurse reviewer from the University of New Mexico train the ED staff and THCs on how to request a consultation and use the equipment.

Once a hospital "goes live" with the ACCESS program, implementation is relatively straightforward:

- An individual presents in a participating hospital's ED with a neuro-emergent condition.
- The patient signs a consent form acknowledging the use of tele-health in the diagnostic exam.
- An ED nurse calls the NMXS call center and requests a consultation, providing basic information about the patient's condition.
- All relevant scans are sent via the NMXS platform for the neurologist or neurosurgeon to review.
- Once a neurologist or neurosurgeon is available for the consult (typically 30 minutes later), he or she calls the physician at the treating hospital.
- The consult consists of a review of the scans, a verbal and visual assessment of the patient through the video monitor and, if necessary, an eye scan.
- The neurologist or neurosurgeon provides a treatment plan, recommending that the patient is transferred to the nearest tertiary center, admitted to the hospital, or discharged.

The THC is part of the hospital's clinical staff and is engaged in setting up and participating in the consultation. In addition, the THC supports the program evaluation by reporting client data to the ACCESS program (see Section C.3). Other key characteristics of the ACCESS program are described in Table 1.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by ACCESS to the implementation and monitoring contractor that cover the first year of the award (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to New Mexico (October 5 to 8, 2015). For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed the principal investigator, program director, and program manager. We also spoke with two nurse educators who train hospitals on the ACCESS process and treatment for neurological conditions. On October 13, we interviewed via phone the nurse reviewer who supports the THCs in data collection activities.

We also visited the three hospitals that were participating in the ACCESS program at the time of the site visit: (1) Eastern New Mexico Medical Center (ENMMC) in Roswell, (2) Nor-Lea Hospital District in Lovington, and (3) Guadalupe County Hospital in Santa Rosa. These hospitals, located throughout eastern New Mexico, vary in size and experience with tele-health. ENMMC is the largest of the three hospitals with 162 beds. It has had a contract for tele-health neurological services with NMXS for approximately four years. As part of the ACCESS program, the hospital upgraded its tele-health technology and added a neurosurgery component. Nor-Lea is a critical access hospital with no prior tele-health experience. It has one neurologist, so ACCESS tele-health technology is used only when he is not attending. The smallest hospital, Guadalupe, has six beds. Given its size, the hospital had conducted only one consultation at the time of the site visit. At each hospital, we interviewed hospital leaders involved in the decision-making process and the THCs and ED staff directly involved in tele-health consultations.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative on the awardee's experience implementing the ACCESS program.

C. Findings

1. How effectively has the program been implemented?

The ACCESS program received a very positive assessment from respondents during our site visit. Overwhelmingly, ED staff appreciated the fact that the technology was intuitive and valuable in treating their patients locally. ED staff also reported that consultations happened

“Now [the doctors] have a backup source to tell them to use it or don’t use it (tPA). Even though something could still go wrong, because the human body is not a machine, it’s a lot more delicate than that. He at least has the confidence that somebody with expertise sat in on a consult.”

— Participating hospital ED staff member

relatively quickly. They put in a request and typically received a call within 30 minutes. In addition, anecdotal evidence showed that patients were very satisfied with the consultation process. They considered it a natural, unobtrusive part of the diagnostic exam. More importantly, they preferred to be treated locally rather than being transferred to a tertiary center, which could be costly and disruptive for them and their families.

Table 1. University of New Mexico: ACCESS characteristics at a glance

Program characteristic	Description
Purpose	The ACCESS program facilitates tele-health consultations for patients presenting at a participating hospital's ED with a neuro-emergent condition. The tele-health platform allows the consulting neurologist or neurosurgeon to view scans, assess the patient via video, and prescribe a treatment plan.
Components	Tele-health (primary)
Target population	Adults insured through Medicaid or Medicare who present in the ED with a neuro-emergent condition
Theory of change/theory of action	Tele-health consultations will decrease the time it takes for the patient to receive a treatment recommended by a specialist, decrease unnecessary transfers, improve physician confidence in treatment decisions, and improve patients' satisfaction because they are being treated closer to home. In turn, the access to specialty care, provided locally through tele-health, will result in better health outcomes and lower health care costs.
Payment model	Fee for service: \$600 to \$1,200 per consultation, which compensates the consulting neurologist or neurosurgeon and the tele-health platform vendor, NMXS
Award amount	\$15,042,466
Launch date ^a	May 4, 2015
Setting	Hospital ED
Market area	Rural
Market location	New Mexico
Core outcomes	Lower health care costs due to a reduction in unnecessary transfers

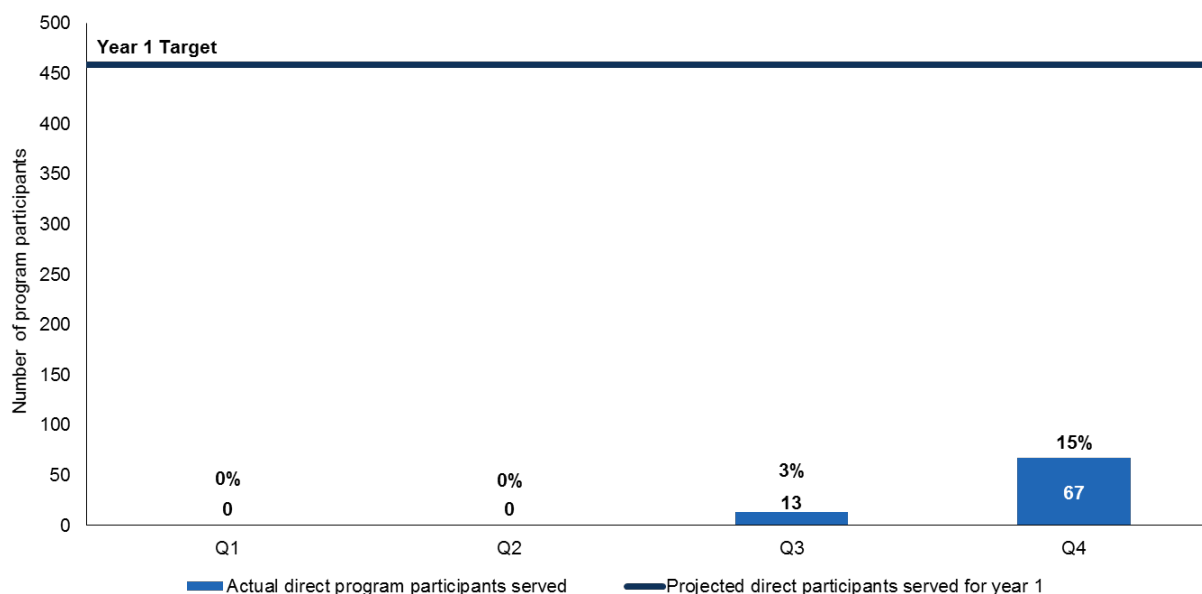
^aAfter a planning period, the awardee's program became operational as of this date.

Although the consultation process has run smoothly, the University of New Mexico has struggled to recruit hospitals. The awardee initially anticipated that all 30 rural hospitals in New

Mexico would participate. Because of the recruiting challenges during the first year of the cooperative agreement, described in Section C.2, the estimate has been adjusted to 20. As of August 31, 2015, the University of New Mexico had signed contracts with 5 hospitals and launched the program in 3 of those hospitals.

The well-established tele-health process with NMXS has meant that once a hospital joins the program, consultations have proceeded without any major issues. Minor feedback from ED staff, such as a patient needing a soft-spoken neurologist to speak more loudly, is provided to ACCESS staff and NMXS for continual improvement. As shown in Figure 1a, despite the straightforward consultation process and need for neurological services, the ACCESS program has provided consultations for only 67 direct participants, about 15 percent of its first-year goal of 459, due to the slow recruitment of hospitals.

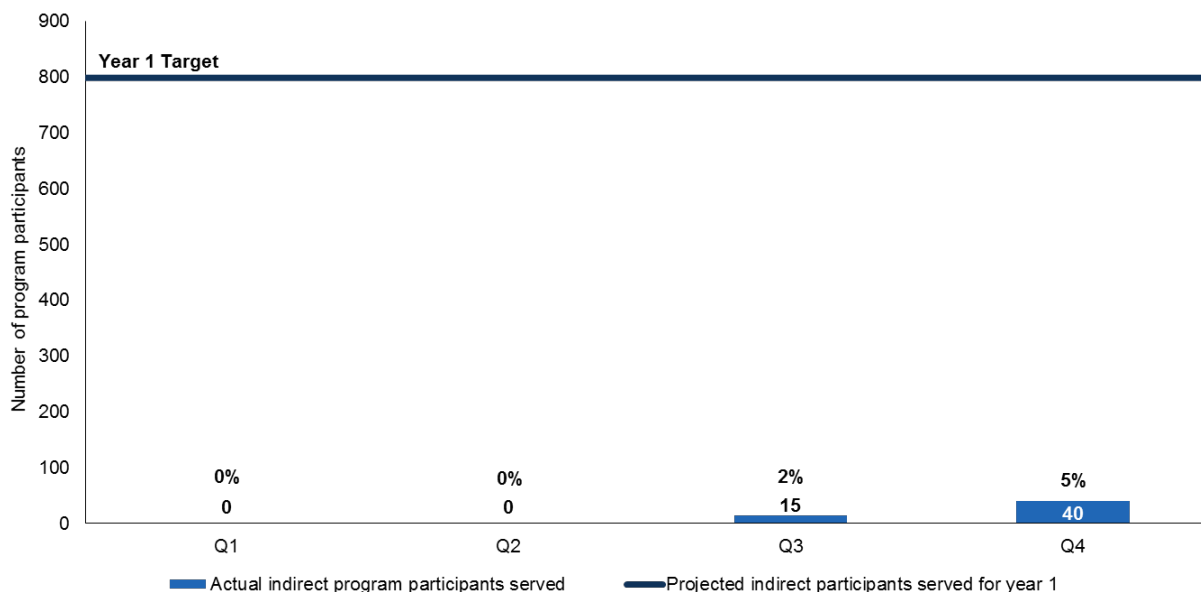
Figure 1a. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflect the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refer to the total number of unique Medicaid and Medicare beneficiaries who have received tele-health services for a neuro-emergent condition or stroke from program launch through the fourth program quarter.

Figure 1b. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected indirect participants served reflect the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refer to the total number of unique participants who received a tele-health consultation, but either were not covered by Medicaid or Medicare or did not have a neuro-emergent condition through the fourth program quarter.

2. What are the facilitators and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The ACCESS program's strong partnership with NMXS is vital to the program's success. Formed in 1995, NMXS has extensive experience with tele-health consultations. In fact, 11 hospitals in New Mexico had already been using the technology for neurological consultations when the ACCESS program was launched. NMXS not only developed the tele-health technology, but also contracts with specialists to provide the consultations. As one ACCESS staff member reported, "NMXS is like a highly advanced call center." The company effectively connects the consulting neurologist or neurosurgeon with the treating hospital, transfers scans, and facilitates videoconferencing. Because of NMXS's longstanding experience, the University of New Mexico did not have to develop new technology or a new consultation process. Instead, its role in developing the ACCESS program has primarily been to expand the reach of tele-health by leveraging this well-established process, adding hospitals, moving existing contracts with neurologists and neurosurgeons from NMXS to the ACCESS program, and contracting with new neurologists and neurosurgeons.

THCs report that ACCESS staff have provided their hospitals with extensive support, which has facilitated implementation. Nurse educators not only assess hospital capacity for treating neuro-emergent conditions, but also give on-site training to hospital staff. By walking clinical staff through cases involving patients with a stroke or traumatic brain injury, program staff increase the hospitals' confidence in treating patients locally. Perhaps the biggest resource to hospitals is the nurse reviewer, who acts as the first line of communication between hospitals, NMXS, and the ACCESS program. This full-time staff person at the University of New Mexico provides technical assistance to rural hospital staff, gives guidance on when a tele-health consultation is appropriate, and receives feedback on the consultation process to communicate to NMXS.

Despite these successes, the University of New Mexico has faced recruiting challenges, primarily because the start-up process is so complex, increasing the potential for delays at each step. First, hospital staff must view the program as not only beneficial for their patients' health, but also financially smart for the hospital. Because the cooperative agreement covers only patients insured through Medicare and Medicaid, hospitals are expected to cover the consultation fee for privately insured or uninsured patients. Small rural hospitals that struggle financially are hesitant to take on this financial burden. In addition, some hospitals are concerned that once the HCIA R2 cooperative agreement ends, consultations will have to stop altogether if no insurer is willing to take on the costs. To address this, the University of New Mexico is helping hospitals understand that by treating more patients locally, they are generating more revenue and offsetting the costs of the consultations. This effort seems to be paying off, as the University of New Mexico is confident that nine additional hospitals will soon launch the program.

Once hospitals commit and sign a contract, they must credential all University of New Mexico-contracted neurologists and neurosurgeons who might provide a consultation. Bottlenecks in hospital bureaucratic processes, especially at hospitals in large health care systems, can delay credentialing for months. To address this, the University of New Mexico has developed a "how to" guide and has worked closely with hospital administrative staff to move the process forward. In addition, the awardee has shifted its focus from hospitals within health care systems to independent hospitals. For instance, the awardee started working with Community Health Systems (CHS) in hopes that all six of its hospitals in New Mexico would implement the ACCESS program, with support of the umbrella organization. However, given CHS' slow bureaucratic processes, the awardee soon realized that focusing on independent hospitals would expedite start-up, as these hospitals are often more nimble because fewer people are involved in the decision-making process.

Frustrations with the slow rollout notwithstanding, the initial low take-up of the program may have helped implementation with the early adopters. The ACCESS program has been afforded the opportunity to provide strong support to hospitals, given their low numbers. In addition, the gradual growth in number of consultations means that the NMXS system and consulting neurologists and neurosurgeons have not been overwhelmed by requests. As a result, hospitals have been able to receive consultations in a timely manner, which is critical to the success of the program. The University of New Mexico is preparing for the next batch of

hospitals by hiring more neurologists and neurosurgeons and possibly hiring additional staff to act as hospital support.

3. How does the awardee make decisions about program-related changes?

Decision making is supported by two main program features: (1) continual communication with hospitals and (2) data collection. After every tele-health consultation, the nurse reviewer communicates with the TCHs and ED staff to assess the process and identify opportunities for improvement. The nurse reviewer immediately contacts NMXS to report issues as part of the feedback loop. For example, one neurologist spoke too softly and the patient, who had just suffered a stroke, could not hear the assessment questions. Hospital staff noted that those involved with the ACCESS program listen to and address concerns.

To inform program implementation and evaluation, University of New Mexico staff collect data on tele-health outcomes and conduct surveys on patient and ED physician experiences. The data collection includes the following:

- **Patient's condition and visit result.** Hospital THC's are responsible for inputting information on the patient's condition and visit result (whether the patient was transferred, admitted, or discharged) into a REDCap database. To create a comparison group, THC's also input information on individuals seen at the hospital with a diagnosis related to a head or facial condition who did not receive a tele-health consultation. This information is reviewed by the nurse reviewer daily to ensure that consultations are provided appropriately and that the data captured are complete and accurate. Any issues are communicated back to the THC's to ensure that the data are corrected and that processes are updated when needed.
- **Follow-up on patient's health condition and experience with tele-health consultation.** The nurse reviewer also contacts patients 48 hours after and 30 days after the consultation to follow up on their health condition and get a better understanding of their experience with the tele-health consultation. The ACCESS program is responsible for all follow-up from the tele-health consultation.
- **The ACCESS program sends a survey to ED clinicians who use the tele-health technology.** The purpose of this evaluation component is to understand whether the tele-health consultation resulted in quality care for patients and made clinicians feel more confident in their ability to treat the patient locally. At the time of the site visit, the University of New Mexico had just received the first batch of surveys from clinicians and therefore did not have time to use the results to update processes.

Because the program has been operating for only six months, the awardee's review of these data has largely focused on data quality (such as completeness and use of correct diagnosis codes for the control group), not program quality. However, as more patients are served and surveys completed, there will be more opportunities to use these data for program decision making.

4. To what extent has the awardee begun to plan for or implement payment reforms?

The ACCESS tele-health consultation fee ranges from \$600 to \$1,200, depending on type, time of day, and duration of the consultation. Part of this fee covers the cost of the NMXS tele-health platform, developed and maintained by NMXS, and carts at the participating hospital. The remainder covers the reimbursement of the attending neurologist or neurosurgeon.

The HCIA R2 funds cover the costs of the tele-health consultation for Medicare and Medicaid beneficiaries. Through its cooperative agreement, the University of New Mexico aims to demonstrate to the Centers for Medicare & Medicaid Services (CMS) and private insurers that the cost of the tele-health consultation offsets the high cost of helicopter transfers. The University of New Mexico has not yet begun negotiating this fee with private insurers. However, one hospital reported that tele-health is an essential service in rural areas, and it is only a matter of time before insurance companies start reimbursing for these costs.

Even if insurers are unwilling to cover the cost of the consultation, the University of New Mexico believes tele-health is still financially beneficial for the hospital. When hospitals will retain their patients rather than transferring them to other hospitals, they receive insurance reimbursement for initial and possibly ongoing treatment. According to ACCESS program staff, this reimbursement more than covers the cost of the tele-health consultation.

D. Impact evaluability assessment

We will use difference-in-differences regressions to compare trends in outcomes from before and after the ACCESS program initiated its services with trends in comparison EDs that provide standard care. Outcomes include total Medicare and Medicaid fee-for-service payments, all-cause hospitalizations, ED visit rates that did not result in hospital admission, 30-day unplanned readmissions, and the number of patients with mild traumatic brain injury or stroke transferred to the University of New Mexico or other referral centers. In particular, difference-in-differences models net out any pre-existing differences between treatment and comparison EDs at baseline that were not accounted for by propensity score matching—provided that these differences would not have changed over time in the absence of the program. Hence, the difference-in-differences analysis together with propensity score matching should help to eliminate biases that would arise from unobserved differences in ED characteristics that do not change over time. Our initial assessment is that a rigorous impact analysis of this program will be possible if the University of New Mexico can achieve total enrollment that is close to the projection of 20 hospitals and 8,504 patients.

E. Next steps

We look forward to continuing to work with the ACCESS program on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

Our next step is to work with the awardee to identify in claims data all Medicare and Medicaid beneficiaries who visit treatment group EDs. Once we have identified all relevant claims for the treatment group, we will calculate descriptive statistics for demographic characteristics and baseline health care utilization and diagnoses. We are working with the awardee to determine the best source of Medicaid data for our analyses. We will also identify Medicare and Medicaid beneficiaries who received care in comparison EDs for stroke or mild traumatic brain injury and will use matching to select a comparison group of EDs in New Mexico and Texas that are similar in observable characteristics to the treatment EDs participating in the program. We will describe our findings from these analyses in future reports.

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APPENDIX B.35

VENTURA COUNTY HEALTH CARE AGENCY

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REPORT

APPENDIX B.35

HCIA Round Two Evaluation: Ventura County Health Care Agency

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–September 30, 2015)

Successes

- Ventura County Health Care Agency's Chronic Obstructive Pulmonary Disease (COPD) Access to Community Health (CATCH) program is slightly below enrollment expectations. As of August 2015, Ventura County Health Care had enrolled 728 clients, about 91 percent of the 800 clients originally projected for this point in time.
- CATCH has helped to improve comprehensive health care to individuals with COPD by providing in-home care, thereby solving transportation-related challenges—one of the most commonly mentioned barriers to health care access in Ventura County.

Challenges and strategies to address them

- Some stakeholders originally resisted implementing CATCH. Respiratory therapists (RTs) objected to allowing registered nurses (RNs) and others to perform pulmonary function tests (PFTs) and asked why the original staffing plan for CATCH did not include RTs. In response, CATCH leaders changed the staffing plan to include two RNs and two RTs instead of the four RNs originally planned. This has resulted in a greater diversity of skills among the CATCH staff and has increased buy-in from stakeholders at hospitals and clinics.
- Private hospitals and clinics have sometimes resisted referring patients to CATCH, concerned that the program would “steal” their clients. Program leaders have worked to engage such facilities by explaining that CATCH is intended to complement, not replace, the care provided by the facilities. As providers come to understand the program better, Ventura County Health Care expects that they will become less reluctant to enroll their own patients.

Lessons learned

- One of the barriers to implementing CATCH has been reluctance from providers who see the program as trying to take patients away from them. Dispelling this notion with new providers will lead to greater buy-in.
- Training and reference materials for physicians must be as succinct as possible.
- Guidelines on participant eligibility must be clear from the start of the program.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on September 30, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected awardees whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for

specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Chronic Obstructive Pulmonary Disease (COPD) Access to Community Health (CATCH) program, which is being implemented by Ventura County Health Care Agency. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the evaluation of HCIA R2 has focused on developing a baseline understanding of Ventura County Health Care's CATCH program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This report presents findings from our analysis of qualitative data gathered through review of the awardee's application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to Ventura County Health Care, and review of CATCH's reports, submitted to the implementation and monitoring contractor, through August 31, 2015.

In addition to providing a general description of Ventura County Health Care's program, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How does Ventura County Health Care make decisions about program-related changes?

4. To what extent has Ventura County Health Care begun to plan for or implement payment reforms?

We also provide a brief summary of the awardee's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

During the last several years, high-level staff at Ventura County Health Care have grown increasingly concerned about the hospitalization and mortality rates of individuals in Ventura County, California, who have COPD, the fourth leading cause of death in the county. Individuals with COPD have frequent visits to emergency departments (EDs) and repeat hospitalizations. They often arrive at the ED for the first time without having been diagnosed, and without knowing they have a serious but manageable chronic condition. When they are discharged and return home, their conditions are often inadequately managed, resulting in poor quality of life, frequent readmissions, and high mortality rates.

Concerned about the cost of these individuals to the county and to Medicaid and Medicare, and about the quality of care they received, officials at Ventura County Health Care set out to design a program that would (1) identify people with COPD in primary care and other frontline settings, before they face a crisis; (2) provide ongoing case management and therapeutic guidance; and (3) train physicians and other medical staff at family clinics to treat COPD using the best evidence-based guidelines available. The ultimate goal has been to improve outcomes for these individuals, improve their quality of life, and reduce costs to the county and to the Centers for Medicare & Medicaid Services (CMS).

Ventura County Health Care received HCIA R2 funding to implement the CATCH program and began enrollment in January 2015. The program is expected to improve quality of care for Ventura County residents with COPD. The aim of the program is to improve awareness among providers and patients of the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines, which classify COPD patients into four stages (1 to 4) based on their lung capacity measured in a pulmonary function or spirometry test. Stage 3 patients, for example, have less than 50 percent lung capacity; stage 4 patients have less than 30 percent lung capacity.

The awardee's theory of change/theory of action (TOC/TOA) has three specific goals that align with CMS's triple aim: (1) better care through improved access (at least 60 percent of participants have a registered nurse appointment within seven days of discharge, at least 90 percent have a primary care physician (PCP) appointment within 30 days of discharge, and at least 85 percent have community-based resources according to care plan); (2) better health outcomes, including improvement in COPD stability, reduced exacerbations, and improved pulmonary function (at least 25 percent of participants stop using tobacco, at least 70 percent improve on a six-minute walk test, and at least 70 percent have a better quality of life per the St. George's Respiratory Questionnaire); and (3) lower costs from fewer visits to EDs and PCPs (reduce per-beneficiary-per-month costs by \$205 or 9.9 percent through improved self-

management, compliance and reduced hospitalizations). To achieve these goals, Ventura County Health Care built two main components into the CATCH program:

- Patient-centered medical homes that integrate GOLD guidelines into practice and that help coordinate care for patients
- Patient and family engagement through home visits from nurses and respiratory therapists (RTs) and through ongoing case management

CATCH was implemented at three different types of organizations in Ventura County: (1) family clinics, which provide primary care to many CMS beneficiaries in the county; (2) the two county-run hospitals—Ventura County Medical Center (VCMC) and Santa Paula Hospital; and (3) mobile, one-stop enrollment fairs for public-assistance benefits.

Other key characteristics of CATCH are described in Table 1.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Ventura County Health Care to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and during a site visit to CATCH and its implementing sites (September 28 to 30, 2015). For our document review, we used a standardized tool to abstract key data from the application, first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials. For our discussions, we scheduled in-person interviews with frontline and administrative staff and CATCH program leaders. We conducted telephone interviews when key staff could not meet with us during the site visit.

We selected sites based on organizational complexity and speed of implementation. We focused on organizational complexity because the CATCH intervention is being implemented in several fundamentally different types of sites: hospitals, family clinics, and mobile one-stop fairs for enrolling individuals into public assistance programs. The sites vary in their organizational complexity, from high to relatively low. We chose speed of implementation because some family clinics have been faster to implement the CATCH protocol than others.

In addition to interviewing CATCH leaders and staff, we interviewed several stakeholders—including medical directors and frontline staff—at the agency hospitals (VCMC and Santa Paula Hospital), the agency clinics in Camarillo and Ventura, and the one-stop fair.

Table 1. Ventura County Health Care: CATCH characteristics at a glance

Program characteristic	Description
Purpose	Ventura County Health Care is implementing CATCH to improve quality of care for Ventura County residents with COPD. The program is designed to improve provider and patient awareness of the GOLD guidelines and improve access to health care and resources for patients with COPD to decrease the incidence of avoidable visits to EDs and visits to PCPs.
Components	Patient-centered medical home (primary) and patient and family engagement (primary)
Target population	Medicare and/or Medicaid beneficiaries in Ventura County with COPD
Theory of change/theory of action	CATCH is expected to lead to better COPD management by teaching the GOLD guidelines to the staff in family clinics. The program is also expected to lead to improved outcomes in pulmonary function and quality of life. Finally, CATCH will reduce ED and PCP visits, resulting in cost savings to CMS.
Payment model	Per capita care management payment, bundled payment CATCHpay will be implemented in two phases. In phase 1, payers will pay physicians a performance-based bonus for meeting certain criteria, including completing surveys, completing spirometry training, and providing timely consultations to patients in person and by phone. In phase 2, pending CMS approval, CATCHpay will bundle payments by episodes based on GOLD severity risk assessment.
Award amount	\$4,136,499
Launch date ^a	9/1/2014
Setting	Patient home, family clinics
Market area	Urban and suburban
Market location	Ventura County
Core outcomes	Reduced health care costs from reduced ED and PCP visits. Increased access to health care, reduced exacerbations, and improved quality of life

^aAfter a planning period, the awardee's program became operational as of this date.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded and transcribed all interviews. A team member received training, achieved inter-rater reliability on coding, and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this report on the CATCH implementation experience.

C. Findings

1. How effectively has the program been implemented?

After a slow start in hiring new staff, CATCH began outreach to stakeholders in January 2015. Hiring staff—including the program director—took longer than expected

because, as a government agency, Ventura County Health Care's hiring process is rigorous and time-consuming. Despite this delay, by January 2015, CATCH was ready to reach out to stakeholders, including medical directors at the county's family clinics, to explain the GOLD guidelines. CATCH staff then held training sessions for frontline staff representatives from each family clinic (usually nurses) who were trained to administer pulmonary function tests (PFTs) using spirometers. In some cases, these staff members became responsible for training staff at their clinics. At the same time, CATCH staff engaged and trained RTs at the two county hospitals and established a presence at the mobile one-stop benefits fairs by having one of CATCH's full-time RTs provide on-the-spot PFTs to individuals attending the fairs.

By bringing care into the homes of individuals with COPD, CATCH has overcome a substantial barrier to care: access to transportation. Many interviewees, including CATCH leadership, family clinic medical directors, and frontline staff, noted that poor public transportation options in Ventura County previously made it difficult to keep individuals with COPD engaged in care. Interviewees felt strongly that the in-home care that CATCH provides has improved engagement in care, compliance with treatment plans, and outcomes.

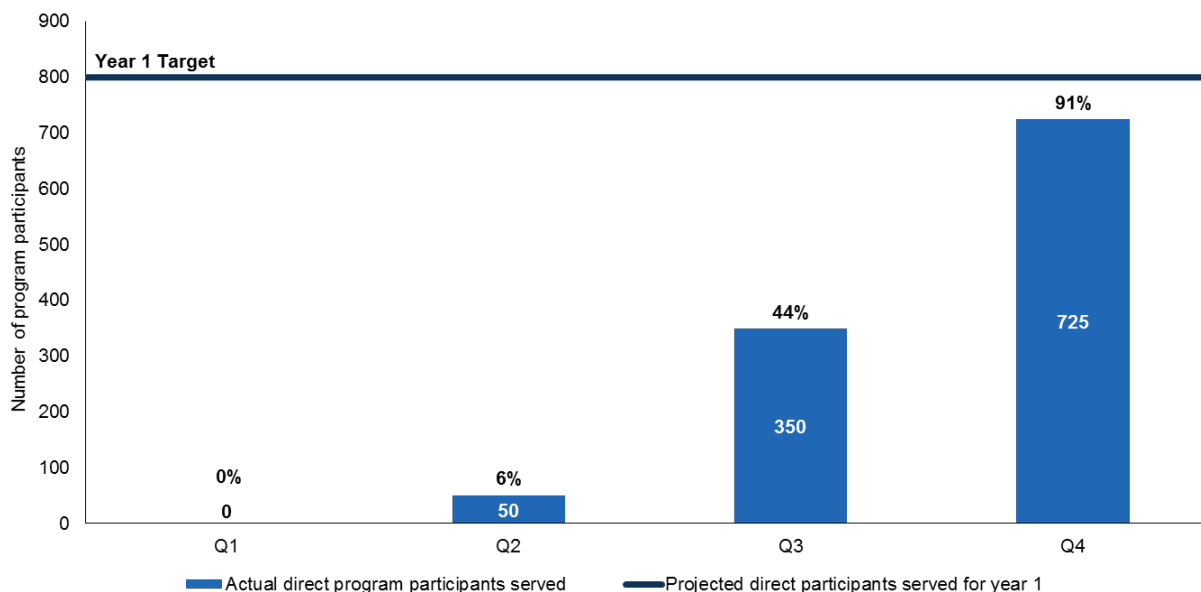
CATCH was close to meeting its Year 1 enrollment targets due to its multi-pronged recruitment strategy. After introducing the program and training stakeholders, CATCH staff focused on identifying people with COPD using the electronic medical records (EMRs) of patients already in Ventura County Health Care's Cerner system. They began reaching out to individuals who were being discharged from hospitals and EDs and people with COPD who visited one-stop public-assistance fairs.

Enrollment to date has been slightly less than expected (see Figure 1), and it is possible that the rate of enrollment could slow as the county's pool of eligible individuals who can be contacted through these means decreases. Many of the people with COPD have already been contacted, and this group will eventually diminish in size, leaving only people who have recently moved to the county or individuals newly diagnosed with COPD. However, as awareness of CATCH grows, more people will hear about the program and refer themselves.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

The two components of CATCH—the patient-centered medical home and patient and family engagement—are closely linked. Although we distinguish between the two components for evaluation purposes, the program staff see them as integrated. As a result, the key program facilitators and barriers we discuss below apply to both components.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. Ventura County Health Care does not have indirect program participants.

At program launch in January, CATCH staff generated a preliminary list of potential enrollees by searching Cerner for all EMR records that indicated a diagnosis of COPD. The CATCH staff then provided lists of individuals to the family clinics and relied on clinic staff to reach out and encourage them to enroll in CATCH. Clinic staff were largely supportive and grateful for the CATCH program, but many of those we interviewed reported that the outreach task was time-consuming. The Cerner queries produced long lists of patients for the clinics to contact by phone. A nurse administrator at one family clinic expressed frustration about the coordination in the beginning because some efforts were being duplicated by clinic and CATCH staff. In at least couple of cases, for example, clinic staff ran searches of Cerner and received names duplicated by searches by CATCH staff. However, most clinic staff—administrators and frontline staff alike—acknowledged that the payoff was worth the effort, as providers were happy to help their patients gain access to the additional care and support that CATCH offers.

After the start-up task of contacting candidate enrollees, the burden on clinic workers decreased. As individuals with COPD arrived, staff at the clinics could administer PFTs on site the day of the appointment and refer patients for PFTs over the phone. In some cases, when

“I wouldn’t have predicted that by now we would be at a stage where it seems to be no burden. Because at the beginning it did seem like a lot of work for our staff to identify patients, do spirometry, do the reports, refer them, but now it’s very effortless, pretty much.”

— Family clinic medical director

patients had used an inhaler before the appointment, PFTs had to be rescheduled (because recent inhaler use will cause false readings), but providers could still refer these patients to CATCH staff. Referral mechanisms varied by site: staff at family clinics often called CATCH directly (and appreciated that

CATCH staff were often immediately available); others used secure email or the Cerner system to flag potential participants. In some cases, patients who heard about CATCH self-referred via text message to CATCH staff, using a number promoted in CATCH advertising. One patient saw a newspaper ad and mailed it into CATCH with a note saying he wanted to be in the program.

As noted earlier, the goal of CATCH’s patient-centered medical home is to promote the use of GOLD guidelines throughout the county, at family clinics, and at hospitals. Many PCPs (and even some pulmonologists) initially were unfamiliar with GOLD guidelines. CATCH staff introduced the guidelines to clinic staff during training and gave them a 44-page “pocket book” intended to serve as an easy reference source. In addition, they provided a small, yellow, laminated card summarizing the GOLD guidelines. Most people we interviewed liked this card a great deal and carried it around, often on the same lanyard that held their hospital badges. However, a medical director at one clinic thought that the sheer length of the pocket book made it unusable. (Indeed, he noted that the best way to get a provider to ignore something was to give him or her a 44-page “summary”). He suggested dramatically reducing the size of the pocket book to one or two pages. Still, the training and the small card had an impact: we found that providers were well acquainted with GOLD guidelines—a significant change compared to before CATCH was implemented.

Some staff were confused at the start of the program regarding who was eligible to participate in CATCH, though program staff encouraged providers to simply refer

“The way it was rolled out wasn’t perfect at this site, because it was somewhat of a moving target. Initially we were told that all patients with COPD qualified, and then we were told that only Medicare patients qualified. Finally we were told it was Medicare *and* Medicaid, so it was all over the map . . .”

— Family clinic medical director

everyone. It was not clear at first that all CMS beneficiaries could be enrolled in the program. Staff at one clinic thought at first that anyone was eligible, and then only Medicare beneficiaries. They found it frustrating to learn later that Medicaid beneficiaries were eligible as well. In fact, CATCH encourages providers to

refer anyone. Even if the person is not eligible to enroll, CATCH staff can guide such individuals to the best care available to them.

3. How does the awardee make decisions about program-related changes?

At this stage, the awardee is primarily focused on the rate of enrollment but is collecting data to measure the outcomes it hopes to achieve. They include reduced exacerbations, improved health and quality of life, and reduced costs. To collect these data, Ventura County Health Care requires each participant to undergo several tests and complete questionnaires upon enrollment, including the PFT, a breathlessness scale, and a symptomatic scale. The results are recorded in Cerner and will be immediately available for analysis once CATCH staff begin to evaluate the success of the program. CATCH staff are reporting the following data to the implementation and monitoring contractor: vaccination rates for pneumonia and influenza; participation in tobacco cessation programs; documented spirometry tests; prescription rates for bronchodilators; mortality rates; patient health questionnaires; and rates of ED visits.

CATCH leaders have made three minor changes to the original implementation plan. The changes were outlined during our interview with awardee leaders: (1) a change in some staffing requirements, (2) a change in one of the outcome measures, and (3) a change in one of the services provided. First, when CATCH was introduced, there was pushback from stakeholders because no RTs were included on the CATCH staff. In response, Ventura County Health Care amended its staffing plan to include two RTs and two RNs instead of the four RNs planned.

Second, CATCH specified that one of the outcome measures would be the six-minute walk test. It is usually not feasible to perform this test during a home visit because a physician must be present and the test requires a fairly long flat surface, which was not always available in or near a patient's home. The responsibility for the test has, therefore, shifted to the clinics, where physicians are present and flat surfaces are available. A possible drawback, however, is that clinics may be less rigorous about administering this test.

Third, CATCH leaders had planned to give to GOLD stages 3 and 4 participants an emergency pack of antibiotics. Staff discovered that this is not legal, however, so these medications will be provided only in a clinical setting, where a physician can prescribe them.

Most patients and providers welcomed CATCH and regarded it as a beneficial program. In rare cases, when there was friction among the various programs within Ventura County Health Care (inpatient versus outpatient care, for example), awardee leaders received support from the director of the agency. When hospital staff resisted including CATCH staff in patient discharge meetings, for example, the director stepped

"Diagnosing people on the spot. Not having to send them to a pulmonologist. It changes drastically what the provider does. So our medical director diagnosing that patient, now that he knew for sure, it changed his plan. His plan of care. Whereas before, it was—we're going to give you this referral, and we're going to send you to go get tested and we'll try to figure what kind of care you need later. So they're diagnosed much quicker and they get the right care instantaneously."

— Family clinic nurse

in, stating that CATCH staff were part of Ventura County Health Care and would attend the meetings.

4. To what extent has the awardee begun to plan for or implement payment reforms?

Ventura County Health Care's proposed payment model is called CATCHpay. It will be implemented in two phases. Phase 1 of the awardee's payment reform, which involves performance bonuses to physicians, is already underway. Payers—Medicare, Medicaid, and Valley Care Select (a capitated payment insurer)—are paying physicians a performance-based bonus if they:

- Complete a physician survey
- Complete spirometry training
- Provide an office visit to the patient within five days of hospital discharge
- Make themselves available for phone consultations

In phase 2 of CATCHpay (not yet approved by CMS), Ventura County Health Care will bundle incentive payments by episodes, including medication, based on the GOLD severity risk assessment. The awardee will provide incentives to family clinic medical directors to follow evidence-based guidelines and to use health information technology. As physicians diagnose patients with COPD, they will activate 12-month “baskets” of services associated with the patient's GOLD stage. If CMS approves phase 2, CATCH will align the payment model to improved outcomes as recorded in Cerner. Once a COPD diagnostic stage is entered into the system with a GOLD stage, Cerner will offer a set of default treatment options specific to that stage. The doctor will have the discretion to change the treatment plan, but Cerner will recommend a standard course of treatment and document decision appropriateness for provider payments and program monitoring, with coding for exceptions to guidelines based on professional determinations. Leaders for each medical practice will determine how to apportion performance bonuses to individual physicians.

Although Valley Care Select, Medi-Cal, and some Medicare participants are already in a capitated environment, other Medicare participants would be moved from a fee-for-service (FFS) system.

D. Impact evaluability assessment

After reviewing information in program documentation and from interviews with program staff, we conclude that a rigorous impact analysis is feasible. A difference-in-differences design will compare CATCH enrollees with persons diagnosed with COPD residing in the two counties north of Ventura County—Santa Barbara and San Luis Obispo. The comparison counties have a county organized health system (COHS) similar to the one in Ventura County, where all Medicaid and dually eligible beneficiaries are enrolled in a single managed care plan. The comparison counties also share similar incidence of COPD, demographics, and climate.

Medicare claims histories from the CATCH enrollees will be used to identify Medicare and Medicaid COPD patients in Santa Barbara and San Luis Obispo counties who possess similar COPD risk profiles. Outcomes will be measured by tracking claims and encounter data for both the intervention group and comparison group. There are some challenges, however, that might impede the analysis, such as the ability to access Medicaid encounter data in a timely manner, and having sufficient sample size to detect impacts for certain outcome measures.

E. Next steps

We look forward to continuing to work with the awardee for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The impact evaluation will focus on comparing baseline characteristics and post-intervention characteristics for CATCH enrollees and a similar comparison group not receiving services from CATCH. Ventura County Health Care has given Mathematica a list of the first enrollees in the program, and we are currently collecting claim histories for Medicare FFS enrollees. We will use this information to begin matching a comparison group.

Early in 2016, we expect to produce baseline statistics for Ventura County Health Care Medicare FFS enrollees, and to have regression-adjusted impact estimates by the middle of 2016. Although there are sufficient numbers for baseline descriptive statistics for Medicaid managed care beneficiaries, the ability to produce quantitative results, as well as identify a comparison group of Medicaid and dually eligible beneficiaries, within the first four quarters of the program will depend on identifying a timely source for managed care encounter data.

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APPENDIX B.36

VILLAGECARE

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REPORT

APPENDIX B.36

HCIA Round Two Evaluation: VillageCare

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–September 18, 2015)

Successes

- VillageCare engaged a variety of recruitment partners who are already invested in HIV treatment adherence and are enthusiastic about their patients being able to use Rango for education and support. At least one recruitment partner would consider purchasing use of the Rango platform after the cooperative agreement, should the partner have adequate resources.
- VillageCare developed and launched Rango on time (making use of a one-month cushion built into the schedule).
- VillageCare has met its enrollment targets, and disenrollment has been lower than expected.

Challenges and strategies to address them

- VillageCare helps to pay participants' cell phone bills as an incentive to participate in Rango, but staff report that these payments have been more labor intensive to manage and more expensive than originally anticipated. VillageCare responded by limiting the number of approved cell phone carriers and reducing the payments from \$40 to no more than \$35 per month.
- Program liaisons, or enrollment specialists, struggled to enroll new participants in a timely fashion given the volume of interested people, the length of the initial enrollment process, the number of no-shows for enrollment appointments, and competing demands to deliver customer service. VillageCare streamlined the enrollment procedures and reduced the use of prescheduled enrollment appointments to free up program liaisons' time.

Lessons learned

- The rapid development of the Rango platform was facilitated by using technical vendors who had pre-existing tools and by allowing the lead technical vendor significant latitude in coordinating the development.
- VillageCare's devotion of resources to customer service has helped to maintain commitment and satisfaction from program participants.
- Cell phone payments have been a very effective incentive to encourage participation in the program, but they have also been more expensive and labor-intensive to administer than anticipated.
- VillageCare has been responsive to feedback. This has led to improvements in the program, but has also made it challenging for staff and partner organizations to keep up with the frequent changes.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on September 18, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31,

2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children’s Health Insurance Program costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee’s early implementation experiences
3. Assess the facilitators of and barriers to each awardee’s success in implementing its program during the first year of the cooperative agreement

One of the 39 HCIA R2 programs is the Rango program, which is being implemented by VillageCare. In this document (referred to as a “narrative”), we examine this program’s first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of VillageCare’s Rango program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee’s application; initial discussions with the awardee; key informant interviews conducted during a recent site visit to VillageCare and partnering organizations; and a review of VillageCare reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of VillageCare’s Rango program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of our impact evaluability assessment of Rango and identify next steps in our evaluation.

A. Introduction

VillageCare is a community-based, not-for-profit organization in New York City responsible for implementing Rango, a program to improve adherence to HIV treatment through use of an integrated mobile platform and mobile application (or “app”). At the time of our site visit, the platform was functional but the app was not yet available. Rango promotes participant engagement in care and disease self-management through features that facilitate individualized treatment management, connections to other users, education through the provision of health information, and access to community resources. At the time of our site visit, active program features were as follows:

- User profile and avatar
- Friend requests
- Member search
- Private messaging between users
- “Contact us” forms to request customer service
- Discussion boards (monitored by health coaches or HIV treatment professionals)
- Library of self-help articles
- 24/7 virtual support groups on a variety of topics
- Q&A call-ins and messaging with health coaches
- Matches between participants and trained peer mentors
- Medication tracker
- Text reminders to take and refill medications
- Searchable database for community social services and supports

An appointment tracker feature was scheduled to be released in January 2016.

Staff in two key roles—program liaisons and health coaches—support participants enrolled in Rango. Program liaisons work out of VillageCare and partnering payer and provider sites to enroll participants in Rango. They collect baseline and demographic information, help participants set up their user name and password and select which features to use, orient participants to the platform, and provide customer service. Health coaches monitor participants’

use of the platform and work to engage participants by providing general information about health, wellness, and treatment adherence; promoting events and discussions; and encouraging participants to think about their health.

VillageCare anticipates that Rango will increase participants' retention in HIV/AIDS care; support treatment adherence; increase participants' time in first-line (that is, least burdensome and least costly) HIV/AIDS treatment; and reduce costly hospitalizations and outpatient services associated with treatment failure.

Table 1. VillageCare: Rango characteristics at a glance

Program characteristic	Description
Purpose	Technology-based program to improve adherence to HIV/AIDS treatment through the use of an integrated mobile platform and mobile app
Components	<ul style="list-style-type: none"> • Patient engagement: Rango supports self-management of HIV/AIDS and associated conditions (primary) • Health information technology: Mobile platform and app with educational, motivational, and reminder features (primary)
Target population	Participants age 18 and older diagnosed with and prescribed medication for HIV/AIDS; living in New York City and the surrounding areas; and covered by Medicaid, Medicare, or both (dual eligible). Most current participants are Medicaid only.
Theory of change/theory of action	Participants' use of electronic self-care tools will improve their adherence to HIV treatment and their engagement in and satisfaction with their care. In this way, VillageCare anticipates that Rango will reduce the costs associated with treatment failure and eliminate the need for more burdensome and expensive therapies.
Payment model	Per capita care management payment: development of a per member per month (PMPM) or a flat annual usage fee
Award amount	\$7,983,297
Launch date ^a	4/1/2016
Setting	<ul style="list-style-type: none"> • Recruitment at partnering community-based organizations, payer sites, and primary care provider locations • Services delivered through Rango platform
Market area	Urban
Market location	New York City and surrounding areas—including the Bronx, Brooklyn, Manhattan, Queens, and Staten Island, as well as Nassau, Suffolk, and Westchester counties
Core outcomes	<ul style="list-style-type: none"> • Adherence to treatment • Participant engagement • Participant satisfaction

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by VillageCare to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during the team's site visit to VillageCare (September 16 to 18, 2015). For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

We visited five sites and spoke to 14 interviewees to learn about the Rango program. We interviewed administrative and field-based VillageCare staff with responsibilities that included project management, oversight of and communication with participants using the virtual platform, enrollment and customer service, and data collection. We also visited three of the payer or provider partners responsible for participant recruitment, selecting one of each of the three organizational types (primary care providers, community-based organizations, and payers) involved in the program (see Table 2). To understand the technological components of Rango, we attended demonstrations to see how the Rango platform, Lars participant enrollment database, and Izenda Business Intelligence reporting tool worked. We also interviewed staff from Wellness Layers, a key technical partner responsible for building and maintaining the virtual platform and app.

Table 2. VillageCare's payer and provider partners interviewed during the first site visit

Organization type	Organization name and description	Location
Primary care provider	Montefiore Medical Center, a major health system offering comprehensive primary and specialty care	Bronx, NY
Community-based organization	Gay Men's Health Crisis (GMHC), a nonprofit organization specializing in HIV/AIDS prevention, care, and advocacy	New York, NY
Payer	Amida Care, a nonprofit organization located in Manhattan that offers a Medicaid-supported special needs plan for HIV-positive beneficiaries living in New York	New York, NY

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we audio-recorded and transcribed all interviews. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts describing the implementation experiences. The team then extracted text pertaining to the research questions identified below. Using these extracts and information from the document review, the evaluation team synthesized the material into this narrative on VillageCare's implementation experience.

C. Findings

1. How effectively has the program been implemented?

VillageCare launched Rango in April 2015, about a month behind schedule, as a result of delays in the technical development of the platform. VillageCare had anticipated potential delays, however, and had included a one-month cushion in its original project timeline. (Section C.2a provides more information about the technical development of Rango.)

VillageCare effectively recruited payer and provider partners to identify potential enrollees for Rango. At the time of the site visit, VillageCare had contracts with five partners that had agreed to meet contractually specified enrollment targets for Rango on a monthly basis. The process for establishing formal agreements with partners took longer than anticipated for several reasons. First, leaders at VillageCare initially believed that partners would accept VillageCare's approval from its institutional review board (IRB) as sufficient for the project, but the partners determined that they needed approval from their own IRBs as well. Rango also evolved during the contractual process, which required ongoing changes to the contracts and, in at least one case, additional IRB review. Finally, the contracts required significant legal research to address confidentiality concerns related to HIV/AIDS and to determine whether terms and conditions from the Centers for Medicare & Medicaid Services (CMS) would apply to partners.

As shown in Figure 1, Village Care had enrolled 339 participants by the end of the third quarter and 1,056 participants by the end of the fourth quarter—exceeding the organization's Year 1 target of 981 participants by 8 percent.¹

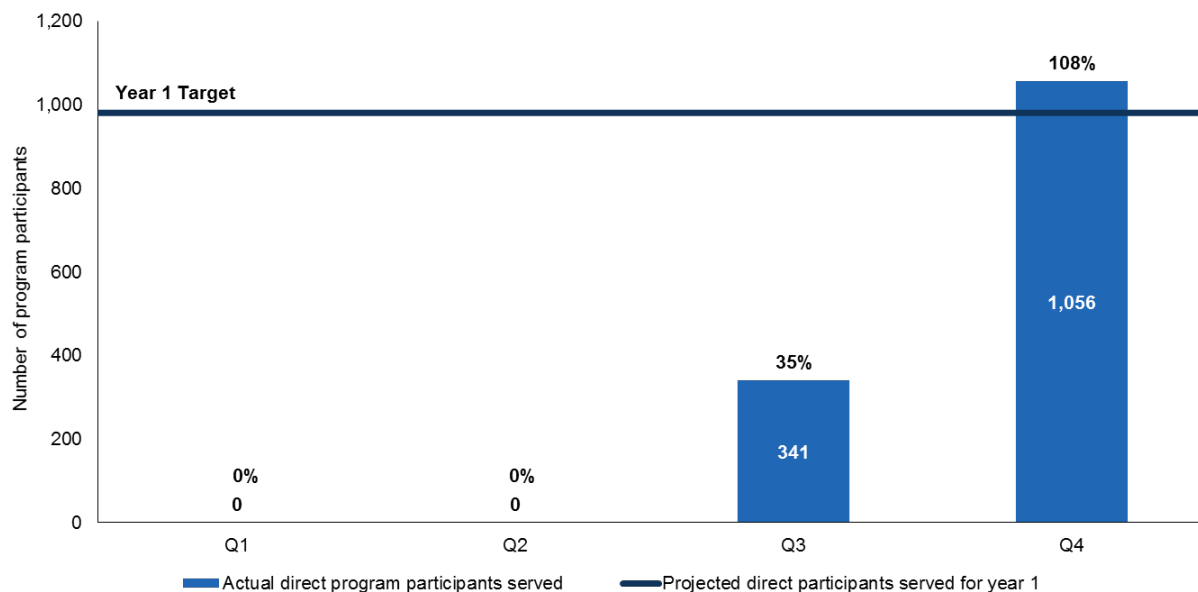
VillageCare provides incentives for participants to enroll in and use Rango at least once per month by offering participants up to \$35 to help pay their monthly cell phone bills.² **The cell phone payments effectively attract participants to the program.** VillageCare and its partners said that the incentive is so compelling to participants that some of those wishing to enroll know little else about the program. Program liaisons work to shift the participants' focus from the cell phone payment by helping them to understand what the program is, how they can get involved in it, and how it can benefit them. The cell phone payments also serve as an incentive for participants to remain engaged in the program: Participants must use at least one program feature each month to remain enrolled and qualify for the cell phone payment. Staff across organizations described the target population as generally of very low income and explained that some Rango

¹ As per a memo to CMS on June 22, 2015, VillageCare adjusted its enrollment targets slightly to reflect the delayed platform launch. The original Year 1 target was 1,177; this was revised downwards to 981.

² VillageCare initially proposed that participants would access Rango using cell phones provided by VillageCare through a partnership with AT&T. Project leaders abandoned this idea upon receipt of funding because they could sustain cell phone contributions more easily than distributing phones and because patients who already had a cell phone would not likely want to carry two phones.

participants could not consistently maintain their cell phone service without VillageCare's contributions.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. VillageCare does not have indirect program participants.

VillageCare's leaders described the cell phone payments as more labor intensive and expensive than expected because of the time spent processing payments, hidden fees charged by cell phone carriers, and a lower-than-expected rate of disenrollment. VillageCare anticipated that 12 percent of users would disenroll each month. But at the time of the site visit, only 3 percent of users withdrew each month, resulting in higher payments. VillageCare responded by decreasing the amount of the maximum cell phone payments by \$5 per participant. Cost considerations also led leaders to pursue strategies for saving project money more generally by (1) limiting the plans eligible for the payments, which reduced labor costs associated with managing the incentives; (2) dropping funding for mobile phones for program liaisons; and (3) renegotiating the costs of supported Rango platform features with technical vendors (for example, for text reminders).

Reductions in cell phone payments led to significant participant dissatisfaction and a high volume of customer service complaints. Staff explained that the \$5 reduction might not seem like much money, but \$5 makes a big difference in the lives of low-income participants, who have difficulty absorbing any financial loss. The \$5 reduction and the decision not to support some cell phone carriers led angry participants to call program liaisons demanding

explanations. The referring payers and providers did not receive advance notice of the change, which undermined their ability to respond to participant grievances. Participant dissatisfaction and the volume of complaints led VillageCare to implement better customer service processes, including those for filing and describing customer service complaints. VillageCare also installed customer feedback boxes in public enrollment sites and hired a full-time staff member to process payments. VillageCare’s program liaisons assumed responsibility for taking customer service calls on a dedicated line created after the initial influx of complaints; several interviewees indicated that taking these calls required a great deal of staff time. Staff anticipated that the surge in complaints would subside after participants adjusted to the change.

Although VillageCare and its partners have met the enrollment targets to date, the program may not have enough staff to continue meeting its enrollment goals while also providing ongoing support to existing participants.

“There are so many partners and so many sites that want us to be working at [their organization] and helping with [the program]. We don’t really have enough program liaisons to do everything that we want to do at this time, and that’s been a little challenging, honestly.”

— Program liaison

The number of Rango users continues to grow, but staffing will remain the same. Program liaisons described high demand for the program but not enough time to complete enrollment with all interested individuals. One consequence is that participants may have to wait two or three weeks before they can schedule an enrollment appointment. To address this issue, VillageCare staff has streamlined the enrollment processes. The original enrollment process required 60 to 90

minutes per participant and wasted time when participants did not show up for their appointments. At the time of the site visit, changes to the process included group enrollments, asking participants to complete intake forms independently, use of a video orientation to the intake process, and reduced reliance on enrollment appointments.³

VillageCare made several changes to Rango between the time of the HCIA R2 application and program implementation. **The most fundamental change shifted the focus of the platform from care management to self-care.** Rango’s project director, who first assumed responsibility for the program after VillageCare’s application for funding was submitted, believed that designing Rango to facilitate personal responsibility for treatment would distinguish it from the

“Yeah, I think it’s a really challenging group of people who are very—at least in New York City—are very used to a lot of hand-holding, and they’re very codependent overall. So I think it’s a challenge. I think we are moving in the right direction.”

— Project leader

care management services that potential partners already offered to the target population. In New York City, many organizations serving HIV-positive people compete for New York State’s Health Homes funding. Consistent with the project director’s thinking, at least one partner characterized Rango’s focus on self-care

³ VillageCare reports that, after the site visit, it further modified enrollment procedures to be only minimally dependent on appointments. We will describe the new procedures in future reports.

as distinct from what his organization typically offers. However, several interviewees also said that Rango's focus on self-care may not align well with the target population's expectations to receive more intensive, hands-on support. Moreover, because the target population consists of many socially fragile individuals, they may not be prepared to manage their care effectively.

VillageCare also made changes to reduce the burden of program participation on partner organizations. VillageCare had initially envisioned that providers at partner organizations would enroll participants in the program, and that the partners would interact with Rango (for example, entering patients' appointments and ensuring that the medications patients say they are taking are aligned with what the doctor wants them to be taking). When VillageCare was talking to potential partner organizations about participating in the program, however, some organizations were not interested because they thought it would be too burdensome for providers. VillageCare has since determined that it is not necessary for providers to interact with Rango, and eliminated the expectation that providers would enroll participants. Instead, providers refer patients to the program and program liaisons do the enrollment. VillageCare also added a small financial incentive for partner organizations to participate, to compensate them for their efforts in referring patients and for participating on an advisory committee.

The staffing structure of Rango changed dramatically over the course of the project—partly in response to the shift from care management to self-care and partly in response to needs that emerged as the program evolved. Key changes included the following:

- Hiring seven program liaisons instead of a larger staff of care managers, reflecting the transition away from care management and toward self-care, as well as the shift from participant enrollment by providers to participant enrollment by program staff
- Eliminating the internal IT manager position and outsourcing technical responsibilities to a vendor
- Designating a staff member responsible for coordinating the incentive payments
- Combining part-time health coach positions into two full-time positions because part-time staff were less engaged and committed than needed
- Identifying managers to oversee (1) enrollment and customer service and (2) platform content and community

At the time of our visit, project leaders reported that they were satisfied with the staffing changes.

The number of changes to Rango during the implementation period reflects VillageCare's responsiveness to challenges and openness to feedback. Payers and providers described their relationship with VillageCare in positive terms and felt confident that VillageCare would intervene to solve problems as they occurred. For instance, after partners expressed dissatisfaction with the amount of advance notice VillageCare gave them regarding the reduction in cell phone payments, they said they felt reassured that future communication would

be stronger. Staff also felt that programmatic changes to streamline enrollment would help them enroll new participants more efficiently. Interviewees generally described the implementation experience thus far as a learning process for both VillageCare and its partners.

The number of changes to Rango during the implementation period also posed challenges to the staff, payers, and providers. The changes to the enrollment process, platform features and functions, and staffing structure required flexibility from staff and partners. Many of the changes streamlined processes, but they also created a burden for staff, who had to learn new procedures. For instance, program liaisons and their supervisors suggested that greater clarity in policies and procedures (for example, written protocols, which were still being finalized when we visited) would have eased staff burden. Payer and provider partners also explained that staff at their organizations responsible for promoting Rango (for example, social workers) sometimes lacked current information on enrollment processes or program details because different elements of the program changed frequently.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

Below, we discuss facilitators, challenges, and strategies to address the challenges for each of the two primary components of the Rango program: (1) health information technology (health IT) and (2) patient engagement.

a. Primary component: health IT

The Rango platform includes components focusing on participants' individual treatment (such as a medication tracker), connections to other users (such as discussion boards), health information (such as an article library), and links to local community resources. VillageCare and its technical vendors designed the platform so that they could add or remove features. The process VillageCare is using to determine which features to add or remove is described in detail in Section C.3.

VillageCare selected technical vendors with pre-existing infrastructure and expertise to support the desired functionality (such as text alerts and videoconferencing), which accelerated the development of Rango. The lead technical vendor explained that his organization had used health IT to support health interventions for many years and that its staff had experience tailoring products and thinking about ways to increase user engagement. Interviewees described the process of building Rango as an integration of the technical vendors' products and customization, not as development from the ground up.

VillageCare identified its goals and desired functions for Rango and allowed the lead technical vendor considerable latitude to guide product development after VillageCare’s vision was communicated.

A representative of a technical vendor said that, unlike some organizations the vendor has worked with, VillageCare recognized where its strengths were (on the substantive side) and allowed the vendor to manage the technological process, including coordination with the other technical vendors. He noted that having the freedom to control the technical build contributed to the successful launch of the program. He explained that because technical vendors understand the development process, they can more easily identify the steps in product development, manage aspects of a product build, and set realistic deadlines than people unfamiliar with the process.

“I felt that they count on us, and they let us do what they . . . brought us in to do. And yeah, they know about . . . HIV and about the program, and they gave us that along the road, but I felt [they] gave us the freedom to help them help their patients. That’s not always the scenario.”

— Technical vendor

VillageCare’s technical vendors assumed greater control over the technological aspects of Rango’s development as implementation progressed. Initially, VillageCare intended for an internal IT manager, who is no longer working on the project, to communicate project leaders’ needs to the technical vendors. Project leaders determined that their ideas were not always passed along and felt that their internal IT team was assuming greater decision-making authority than needed. After the IT manager left VillageCare, project leaders entrusted their technical vendors to define and take the necessary steps to realize VillageCare’s vision for Rango. Another manager at VillageCare assumed the outgoing manager’s role as a liaison between project leaders and the technical vendors.

Going into implementation, VillageCare staff did not know whether participants would be able to easily access and use the platform because they lacked data on how many participants would have Internet access, smartphones, and the technical skill to navigate Rango. **VillageCare ultimately found that 89 percent of participants began the program with personal smartphones, which was more than they anticipated, but these participants did not always know how to use their phones effectively.** Interviewees reported that many participants are not tech savvy and need a lot of technical support. Furthermore, participants commonly change phones or discontinue cellular service for financial reasons. Participants who do not have smartphones can use some of the features (for example, text medication reminders, calls with health coaches) with a basic cell phone; for other features (for example, discussion boards, library), they would need to use a computer.

b. Primary component: patient engagement

VillageCare intends Rango to be a fun, engaging tool that participants can use to manage their own treatment for HIV and related comorbidities. Project leaders envision that Rango will become a vibrant virtual community where users have the resources to manage their health.

Several factors facilitated patient engagement in Rango. First, **participants enjoyed using avatars as a tool to protect their identity while using the platform.** Interviewees described

“At the beginning, there were a lot of people who were kind of scared of joining our website because of confidentiality issues. The fact that we provide our participants with [the] opportunity of not saying who they really are . . . and having an avatar . . . makes them feel more comfortable.”

— *Health coach*

HIV as a highly stigmatized disease and said that some participants expressed concerns about privacy when first introduced to the program. VillageCare helped participants maintain anonymity by offering them the ability to create avatars, or cartoon user images, and user accounts divorced from their true identity. Users can create avatars by selecting from a variety of facial features, hairstyles, and accessories ranging from

realistic to fantastic (such as avatars designed to look like aliens). Interviewees reported that avatars are the most popular feature of the platform and that participants frequently request more options for customizing their avatars. One interviewee suggested that the avatars are so successful because they promote self-expression and encourage participants to engage emotionally in the platform.

Participants also actively engage in the social components of the platform. We observed that participants used the discussion boards to express concerns about sensitive issues such as psychological distress or medication side effects. Users frequently respond to one another, offering social support, health information, and their shared experiences. Staff anecdotally indicated that users who join Rango for the cell phone payments frequently begin participating in the virtual conversations. Some participants even began using the platform as a dating website. Staff explained that participants may feel more comfortable pursuing romantic connections on the platform than they do in other venues because all users are HIV-positive, which eliminates the need for them to disclose their HIV status. Because one of the goals of the platform is to build a sense of community and encourage people to interact, staff felt that it was not inappropriate for those connections to extend to potentially romantic connections.

VillageCare employs two health coaches to encourage participants to become more involved in the program. The coaches provide general health and wellness information on discussion boards and in articles, and they also communicate with individual participants who request it. The health coaches promote events and discussions that extend beyond HIV (such as doing yoga to enhance health) and encourage participants to think about their health more generally. The participants make positive comments on the coaches’ contributions and appear to consider changing their health behavior in light of the coaches’ recommendations (for example, to modify their diet or try new forms of exercise).

Frontline staff said that Rango further encourages patient engagement by offering useful tools. Frontline staff reported that medication reminder texts help participants comply with their HIV treatment. One staff member explained that HIV care has included medication management for many years, but the technology provides a new means for patients to stay engaged in care.

Staff identified two main challenges with respect to patient engagement. First, **some Rango users enroll in the program for nothing more than cell phone payments and do not actively participate in the virtual community.** Although program liaisons and health coaches stress the value of the platform and post content to encourage its use, staff suspect that some participants use the platform the minimum amount required to remain active in the program and qualify for the incentive payments (one feature per month). It is unclear what proportion of participants may be doing this.

Second, **staff must balance the goal of participant self-sufficiency against the need to be responsive to participant needs.** VillageCare wants participants to use Rango to manage their own health effectively, but participants sometimes need more extended support than the program is designed to offer. Health coaches and project leaders noted that they were not always clear if and when a coach should reach out to participants who appear to have an unmet need. For instance, when one depressed user made an off-hand remark about suicide, a coach had to decide whether to take the remark seriously and arrange a face-to-face intervention or whether the participant was simply expressing frustration. The coach ultimately called emergency services to provide the participant with additional support only to find that the participant was not sincere in his suicidal comments. In other instances, coaches debate whether they should share medically relevant information with payer and provider partners, which could support treatment, or to leave this to participants themselves.

In the coming months, VillageCare intends to make the following changes to Rango:

- Launch a mobile app to make Rango easier to use on a mobile device (the project staff had planned this since the beginning of the project, but technical delays have slowed its implementation)
- Begin the second phase of the platform launch, during which features will change (as described in the following section)
- Finalize procedure manuals that were not finished at the time of launch
- Continue to pursue partnerships with additional payers and providers
- Begin enrollment at the sites of payers and providers that had agreed to refer participants but had not yet begun to do so

3. How does the awardee make decisions about program-related changes?

VillageCare makes program-related changes in consultation with technical vendors and partners. VillageCare's internal staff use weekly operations and improvement meetings to identify ways to strengthen Rango, respond to challenges, track enrollment, share feedback from staff and participants, and review the project timeline. VillageCare also meets with its technical vendors each week to set goals, demonstrate platform changes, and review deadlines and budgets. Payer and provider partners have biweekly conference calls with VillageCare to monitor enrollment figures and troubleshoot problems. Finally, VillageCare assembled an

advisory group with representatives from the five referring payers and providers for more extended opportunities to discuss implementation, program impact, program improvement, and feedback. The advisory group meets quarterly.

VillageCare collects and analyzes data on the use of features, participant characteristics, treatment adherence, patient activation, housing status, and HIV disclosure status. Program liaisons collect data on treatment adherence, patient activation, housing status, and HIV disclosure status at enrollment. VillageCare will collect nine-month follow-up data on these measures through a survey delivered via text message. All of the technical vendors provide data on usage of the various features of Rango. Baseline data collected by program liaisons and data on program use from technical vendors are housed in a single participant database. Project leaders extract and analyze the data using a point-and-click reporting tool.

VillageCare and its partners review the data on program use to determine which of the platform's features are most popular and to guide improvements to the platform. Phase 1 of implementation took place during the first six months following launch. During this time, VillageCare and its partners reviewed data on the use of features each month to identify features of the greatest value to participants. In phase 2, technical vendors will modify the platform, dropping unpopular features, adding new features requested by staff or participants, and enhancing the usability of the platform. At the time of our visit, staff reported that participants were not taking part in video-enabled virtual support groups or the peer mentoring program.⁴ Staff suspected that these features were unpopular because they would reveal participants' identities, which are hidden when using other features. Program liaisons also reported that participants struggled to download a separate app they would need for the virtual support groups, which may have prevented some participants from using the feature. In response, VillageCare planned to discontinue the virtual support groups and peer mentoring features and add a more cost-effective and identity-concealing feature for live chat.

"[During a presentation to potential participants], these three guys who are enrolled in the program just, naturally, kind of disclosed that they were enrolled, and I said, 'If you guys have anything you'd like to say about it, feel free.' They talked it up and said how wonderful it was and how it's helped them. So those testimonials, and hearing those testimonials, make my day. It's great to hear that it's having a positive impact. . . . Again, I really believe in it."

— Program liaison

Staff collect participant feedback on Rango through formal and informal mechanisms.

Formal mechanisms include tracking participant complaints through a dedicated system for customer service and through text message satisfaction surveys administered every three months. VillageCare scores the surveys using a 0 to 4 scale, much like a GPA. When we visited, the score was very high ("magna cum laude"). The survey allows free text responses, but VillageCare had not analyzed the responses at the time of our

⁴ Since the time of the site visit, Village Care has terminated contracts with the virtual support group and peer mentoring technology vendors.

visit. Program liaisons receive informal feedback through their interactions with participants and report that the response is generally positive. Health coaches also get ideas from participants through the questions and comments they post online.

Program liaisons and health coaches can provide feedback through regular meetings with VillageCare managers. They reported that the project manager is very flexible and open to suggestions from the frontline staff. Decisions about updates and changes to Rango are made as a group. The liaisons and coaches interviewed during the site visit said that they thought the Rango platform is great—that it meets the needs of a lot of people and is easy to use. Frontline staff enjoy helping participants, but the liaisons also described themselves as being stretched thin with the number of participant enrollments and customer service complaints. One liaison said that the position required more administrative work than originally envisioned and wished that she had more time for participant outreach.

4. To what extent has the awardee begun to plan for or implement payment reforms?

VillageCare projects that Rango will reduce the total cost of care by \$195 per member per month (PMPM). Rango’s leaders at VillageCare conceptualize the virtual platform as a “commercial product” that health care organizations will pay to use with a PMPM service fee after the HCIA funding ends. They argue that nonadherence to HIV treatment leads to poor health outcomes for patients, which can lead to expensive interventions. If participants use the platform to manage their own care more effectively, they should be healthier, more satisfied, and less costly to treat. VillageCare is still working to determine precisely what would be included in the final product, but it would include at least the platform itself and the health coaches.

VillageCare has partnered with payer Amida Care, a Medicaid special needs plan, to optimize the Rango platform by identifying the features of greatest use to participants and offering those features at the lowest possible cost. As described in the previous section, VillageCare uses data on participants’ use of features to add and “peel off” features in order to improve Rango and reduce the price of care. VillageCare also refines the product by looking for ways to deliver services in the most cost-effective way. For instance, VillageCare is exploring whether it can eventually replace a portion of its expensive text-based medication reminders with medication reminders delivered using app notifications, which are free to send. Amida Care will analyze the cost and use data from its Rango participants to help set the PMPM fee and demonstrate program impact.

“We are trying to perfect a product, prove that it has value, [and] get the cost as low as possible to sell it.”

— Project leader

The evaluation team asked a few payer and provider partners whether they would consider paying VillageCare for use of Rango once the cooperative agreement ends. Currently, VillageCare pays partners a small sum of money to recruit participants for the program. **Several interviewees indicated to us that, although their organizations have limited financial resources, they would in fact consider paying for Rango.** Partnering organizations describe

themselves as very client focused; one interviewee said his organization's leaders would purchase Rango if they were convinced that participants found value in the platform.

VillageCare lacks data about whether participants will find the same value in Rango after they stop receiving cell phone payments for using the platform. Each participant is eligible to receive payments for up to one year. After that year, staff do not know whether participants will remain engaged. The low-income target population may also lose access to the platform after participants stop receiving cell phone payments.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we concluded that a rigorous impact analysis of Rango was feasible. We will select a comparison group by identifying beneficiaries who meet the requirements to be in the demonstration (at least 18 years old with a diagnosis of HIV/AIDS); who live in the same region from which the treatment group is drawn (New York City and surrounding areas); and who are covered by Medicaid, Medicare, or both. We will use a multivariate difference-in-differences model, which tracks outcomes from both the treatment and comparison groups in the base period and in the performance period, to estimate program impacts. All requisite data for the treatment and comparison groups are available, and the sample is sufficient in size to enable us to identify program impacts.

E. Next steps

We look forward to continuing to work with VillageCare for the rest of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact evaluation include obtaining an updated list of the enrolled beneficiaries from VillageCare, obtaining Medicaid data from New York State (we already have Medicare data), reviewing descriptive baseline data for the treatment and comparison groups, estimating a propensity score model, and performing propensity score matching. If there are few or no statistically significant differences between the treatment and comparison groups, we will

estimate the outcomes using regression models after creating our outcome and explanatory variables. We will describe our findings in future reports.

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APPENDIX B.37

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE **IN ST. LOUIS**

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REPORT

APPENDIX B.37

HCIA Round Two Evaluation: Washington University School of Medicine in St. Louis

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–October 27, 2015)

Successes

- The Contraceptive Choice Center (C3) clinic is fully operational in newly renovated space. It provides contraceptive counseling and clinical services in a manner consistent with the workflow design the awardee proposed in the HCIA R2 application.
- C3 has been able to implement models that it developed and tested under the earlier CHOICE project for both (1) patient education and counseling and (2) same-day contraceptive services.
- C3's social worker is now a fully trained and licensed insurance counselor and navigator for the clinic's uninsured patients.
- C3 leaders and staff have drawn on resources in the greater Washington University community to help them address implementation issues related to marketing, community outreach, billing, and reimbursement.

Challenges and strategies to address them

- The current public and private insurance environment in Missouri has made it necessary for C3 to rethink its strategies for financial sustainability. The social worker's help to patients navigating their health insurance options has proven to be a critical component of C3's program design.
- The slower-than-anticipated pace of recruiting and enrolling patients prompted C3 staff and leaders to brainstorm new outreach strategies, dedicate staff resources to oversee them, continuously monitor their effectiveness, and consider alternative approaches as warranted.

Lessons learned

- Lack of insurance coverage and an inability to pay out-of-pocket costs are major barriers to women at high risk for unintended pregnancy as they seek effective contraceptive care in the St. Louis metropolitan area.
- C3 leaders' experience with the fully funded CHOICE project gave them effective clinical models of care, but did little to prepare them for the demands of implementing those models in the real world of Medicaid, Title X, and commercial insurance.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on October 27, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round 2 of the Health Care Innovation Awards (HCIA) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2)

improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Contraceptive Choice Center (C3), which is being implemented by the Washington University School of Medicine in St. Louis. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the C3 program from Washington University, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application; initial discussions with the awardee; key informant interviews conducted during an October 2015 site visit to the C3 clinic at Washington University; and a review of the reports the awardee submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the C3 program, this narrative addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of C3's impact evaluability assessment and identify the next steps in our evaluation.

A. Introduction

Washington University received \$4,034,879 in HCIA R2 funds to launch the C3 program, which is housed in the Department of Obstetrics and Gynecology's Division of Clinical Research. The C3 initiative's theory of change or theory of action is based on the premise that reducing barriers to evidence-based methods of contraception among women of childbearing age and among clinicians who provide family planning services will increase uptake of methods proven to be most effective, resulting in a reduction in unintended pregnancies and childbirth and their associated costs. C3 is modeled after the earlier Contraceptive CHOICE Project, a privately funded research project that provided contraceptive services at no cost to over 9,000 women in the St. Louis, Missouri, area from 2007 to 2011. The CHOICE model promotes, in particular, the use of long-acting reversible contraception (LARC), which includes contraceptive implants and intrauterine devices (IUDs). The specific innovation to be developed and tested under HCIA R2 is the implementation of the CHOICE model in a real-world setting, with Medicaid, Title X, and commercial health insurance plans as payers.

The C3 program targets women ages 14 to 45 in the St. Louis area, with a particular emphasis on women who are at high risk for unintended pregnancy and childbirth. The program's three primary goals are to (1) increase uptake of the most effective contraceptive methods by reducing barriers to access, (2) reduce unintended pregnancy in the target population by 10 percent, and (3) reduce the costs associated with unintended births by 15 percent. Primary program components include the following:

- **Patient navigation**—employing and training a social worker to serve as a federally certified and state licensed insurance navigator, who can tell patients their insurance options, help them navigate those options, and help them enroll in coverage
- **Patient engagement**—using trained, non-clinician health educators to give structured, evidence-based contraceptive counseling to all patients before they receive services and to support those who have concerns after they receive services
- **Direct care provision**—having trained clinicians provide same-day contraceptive services (including same-day insertion of LARCs) that follow evidence-based guidelines

The awardee also seeks specifically to develop a financial strategy and payment model that could sustain its clinic in the absence of external funding and potentially allow it to replicate the program in other clinical settings. Key characteristics of Washington University's C3 program are summarized in Table 1.

The purpose of our first site visit was to collect firsthand information from C3's leaders and frontline staff about their experiences and progress in implementing the C3 program to date—including, their perceptions of the program's successes, any changes they made to the program design or implementation approach, and the challenges they faced along with the strategies they are using to overcome them. Although the primary focus of our visit was to learn about implementation, we also sought to understand the awardee's current thinking on its proposed payment model.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application; (2) self-reports submitted by C3 to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015); and (3) data gathered during initial telephone discussions with the awardee and during our site visit to the C3 program (from October 26 to 27, 2015). For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

Our site visit was to the single C3 program site within the Division of Clinical Research in the Department of Obstetrics and Gynecology at the Washington University School of Medicine in St. Louis, Missouri. We met with the co-project directors at the beginning of the visit to elicit their perspectives on the project and learn about any recent updates, and we met with them again at the end of the visit to debrief and follow up on remaining questions. All other interviews were one-on-one. To provide a perspective on the C3 project in the context of the CHOICE model, we interviewed the physician leader of that project, who also currently leads the Division of Clinical Research. We also interviewed the C3 project manager and evaluation manager, the clinic manager, administrative staff who lead outreach to recruit patients, key actors in the service delivery model who provide direct counseling and family planning services to C3 patients, a social worker who helps patients navigate their insurance options, and the clinic's frontline receptionist.

Table 1. Washington University: C3 characteristics at a glance

Program characteristic	Description
Purpose	The Contraceptive Choice Center (C3) offers contraceptive counseling and family planning services, including same-day insertion of LARCs, to women ages 14 to 45 in St. Louis.
Components	<ul style="list-style-type: none"> • Patient navigation (primary)—employing and training a social worker to serve as a federally certified and state licensed insurance navigator, who can tell patients their insurance options, help them navigate those options, and help them enroll in coverage • Patient engagement (primary)—using trained, non-clinician health educators to give structured, evidence-based contraceptive counseling to all patients before they receive services and to support those who have concerns after they receive services • Direct care provision (primary)—having trained clinicians provide same-day contraceptive services (including same-day insertion of LARCs) that follow evidence-based guidelines

Program characteristic	Description
Target population	Women ages 14 to 45 in the St. Louis area, with a particular emphasis on women who are at high risk for unintended pregnancy and childbirth
Theory of change/theory of action	C3 is based on the premise that reducing barriers to evidence-based methods of contraception among women of childbearing age and among clinicians who provide family planning services will increase uptake of methods proven to be most effective, resulting in a reduction in unintended pregnancies and childbirth and their associated costs
Payment model	Value-based purchasing
Award amount	\$4,034,879
Launch date ^a	January 8, 2015
Setting	C3 is housed in the Division of Clinical Research of the Washington University's Department of Obstetrics and Gynecology
Market area	Urban
Market location	St. Louis, Missouri, metropolitan area
Core outcomes	<ul style="list-style-type: none"> • Increase in uptake of LARCs to 50% of new contraceptive methods • Increase in contraceptive continuation and satisfaction • Lower rate of unintended pregnancy and childbirth • Cost savings from averted unintended pregnancies and births

^aAfter a planning period, the awardee's program became operational as of this date.

A two-person team conducted the interviews using semi-structured protocols. After we obtained the interviewees' consent, we audio-recorded and transcribed all interviews. A trained team member achieved inter-rater reliability on coding and applied codes to identify program components, research questions, and concepts that described implementation experiences. The team then extracted text that pertained to the research questions identified in Section C below. Using these extracts and information from the document review as necessary, the evaluation team prepared this narrative on the C3 project's implementation experience.

C. Findings

1. How effectively has the program been implemented?

At the time of our visit, the C3 clinic was fully operational, providing contraceptive counseling and clinical services in a manner consistent with the workflow design proposed in the HCIA R2 application and developed under the earlier CHOICE program. With the help of HCIA R2 funding, the awardee re-designed and expanded its existing clinic space on the first floor of the Department of Obstetrics and Gynecology's Division of Clinical Research building, and began enrolling patients in January 2015. As a Title X clinic, C3 offers routine preventive gynecological services such as well-woman care, cervical cancer screening, and testing for sexually transmitted infections, in addition to contraceptive services. Women are referred elsewhere for pregnancy-related clinical services (including abortion), non-reversible contraception (such as tubal ligation), and other clinical and social services.

Implementing the program in the “real world” has required the awardee to make several changes to the program design that were not anticipated in the initial application. Because C3, like the CHOICE project that preceded it, is designed to be a clinical research study, enrolling patients entails securing their informed consent to participate in the study. Under Title X, however, patients cannot be required to participate in a research study in order to receive clinical services. As a result, C3 developed and received institutional review board (IRB) approval for new enrollment protocols, which allow C3’s patients to opt out of research, but still receive clinical care.

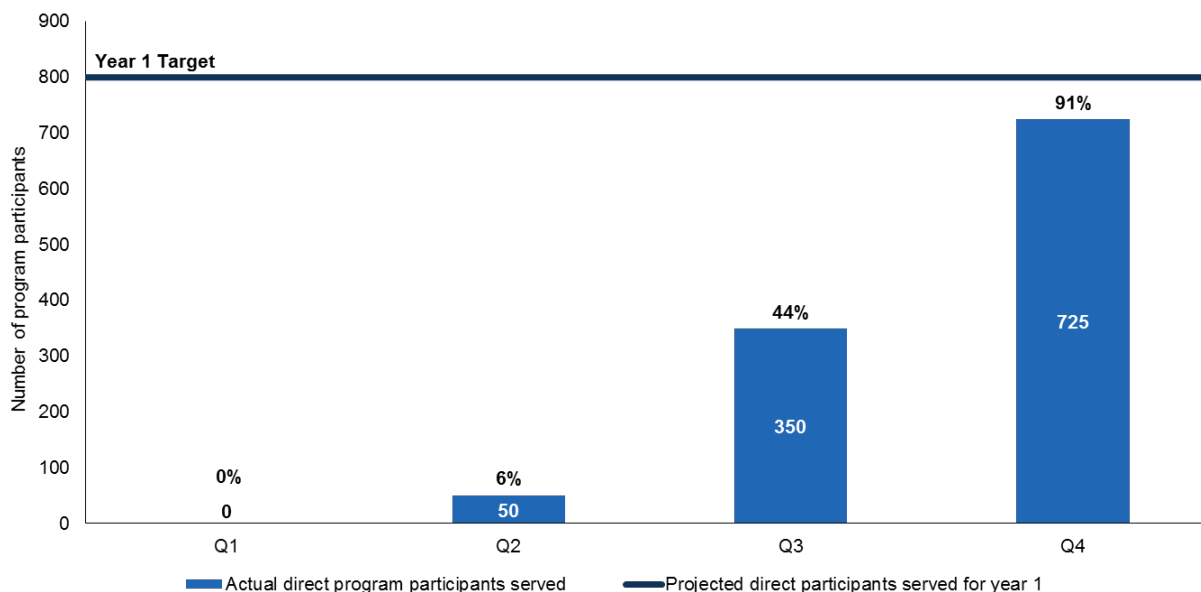
Although having a full-time social worker help patients enroll in insurance coverage was part of the original program design, the unanticipated complexities of Missouri’s current public and private insurance environment have redefined and expanded this insurance role. This has required additional training for the social worker to be federally certified and state licensed as an insurance navigator, which the awardee did not anticipate.

Overall, the pace of patient recruitment and enrollment has been slower than anticipated, and C3 has had mixed results in reaching its target population. C3 originally aimed to enroll 10,000 participants over three years, but slow initial enrollment prompted the awardee to revise this initial projection downward, to 7,397 participants. During the October site visit, C3 noted that the first-year projected enrollment had been revised to 352 participants (see Figure 1) and reported having enrolled a total of 460 participants by the third week of October. C3 offers services to virtually any woman of childbearing age who is capable of becoming pregnant. However, demonstrating the program’s potential to reduce costs requires reaching women at high risk of unintended pregnancy, who tend to be younger and lower income. Because C3 will also rely primarily on Medicaid claims data to track patients’ costs over time, this also requires that the clinic enroll a sufficient number of women who are Medicaid eligible to generate reliable cost estimates. The program’s success in meeting this more targeted population has been mixed. Of the 460 women who had enrolled by the third week of October, we found the following:

- More than half (61.4 percent) had incomes below 100 percent of the federal poverty level (FPL), but only 73 enrollees (15.8 percent) were covered by Medicaid or the Women’s Health Services Program (Missouri’s Medicaid family planning waiver).
- Most were either commercially insured (46.9 percent) or had no insurance (37.3 percent) at the time of enrollment.
- Fewer than half the women (46 percent) were under the age of 26.

However, the awardee has succeeded in attracting a demographic mix of patients who broadly represent its target population in the St. Louis metropolitan area, including a mix of patients identifying as white (50.3 percent), black (43.7 percent), and ethnically Hispanic (12.4 percent).

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data from the implementation and monitoring contractor and October 2015 site visit; first, second, third, and fourth program quarters: September 2014 - August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 award from program launch through the fourth program quarter. Washington University is working with the HCIA Two Help Desk to determine the number of indirect participants per quarter.

Although the IRB approval process and hiring and training new staff took longer than expected at the beginning of the project, the awardee has experienced no significant delays in implementing the program's core components.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

C3's principal strengths derive from its experience with the CHOICE project, the commitment and experience of its leaders and staff, and the resources it is able to draw on in the academic research and medical setting of Washington University. Operationalizing the CHOICE model in the changed (and changing) environment of the "real world," however, has posed unanticipated challenges that affect the implementation of all components of the C3 program. Below, we first describe how the political and policy environment in Missouri affected the initial planning for C3. We then describe how C3's strengths and the challenges it faces are affecting program implementation—including, recruitment and

"Luckily, a lot of us have worked together for years, since the CHOICE project, and so we're at that point where we're pretty comfortable with each other."

— Program staff

enrollment of patients, patient engagement, clinic operations and the provision of care, and planning for financial sustainability.

At the time of the awardee's application for HCIA R2 funding, C3's leaders planned to build on the momentum of what was seen as a hugely successful and popular CHOICE project in order to extend its model of patient engagement and service delivery to women newly covered for contraceptive services under the provisions of the Affordable Care Act (ACA), including Medicaid expansion. C3, with its expected status as a Title X clinic, would be able to provide an even broader array of services to women, whatever their insurance status or income level.

However, Missouri later elected not to expand Medicaid eligibility to people with incomes above the threshold of 19 percent of the FPL. Moreover, one of the state's Medicaid managed care plans and many of the lower-premium commercial plans offered through the state's health insurance exchange established narrow provider networks that do not include Washington University Medical Center because it is considered too expensive.

What the leaders hoped would be a "seamless" transition from CHOICE to C3 turned out to be less so. This turn of events created two immediate challenges for the C3 project once it got off the ground. The first was to find a way to limit patients' out-of-pocket costs, especially for those women in the target population whose incomes were above the 19 percent FPL Medicaid-eligibility limit, but below the 100 percent FPL—the level at which federal subsidies would kick in under the ACA's exchange plans. The second, closely related, challenge was to find a way for the C3 clinic to be reimbursed for the services that were no longer covered by outside funding from a private donor.

Missouri's Medicaid family planning waiver (the Women's Health Services Program) offers a partial solution to these challenges by extending eligibility for Medicaid coverage of contraceptive services to women with incomes up to 185 percent of the FPL. For all uninsured patients, under Title X, the amount paid out of pocket is based on a sliding scale ranging from 0 percent of costs for patients with incomes below 100 percent of the FPL up to 100 percent of costs for those with incomes over 250 percent of the FPL. Women enrolled in commercial exchange plans under the ACA are presumably fully covered for all contraceptive services and devices, but C3 staff noted that other evaluation and management services routinely provided during an office visit may be subject to a co-pay or deductible. Moreover, coverage mandates do not apply to "grandfathered" commercial plans, and the costs to women enrolled in them vary from plan to plan.

a. Primary component: patient identification and enrollment

In retrospect, C3 leaders believe their success recruiting patients into the CHOICE study gave them unrealistic expectations about recruiting patients for C3. CHOICE was exceptional among clinical research studies because it offered women a service they wanted completely free of charge. The awardee cannot make the same offer for C3, and the recruitment challenges it faces are more typical of the challenges faced in other clinical research studies. C3 leaders partly attribute the program's slow start with enrollment to the lag between the end of

CHOICE (its last patients were enrolled in 2011, but were followed through 2013) and the start of C3, which led to a loss of momentum in community awareness and referrals. The awardee still receives some referrals from physicians or clinics in the community, but some observers believe that now that those services are covered by insurance and more physicians are being trained in LARC methods, more physicians are providing contraceptive services directly instead of referring patients elsewhere. Some community physicians may also consider C3 a competitor because the clinic now offers services other than contraception. C3 leaders did, however, cite many examples of collaborative relationships as well.

Recognizing that it cannot rely on CHOICE’s success to recruit new patients, the C3 project team has made recruiting patients a major focus of its implementation activities.

Most staff have taken part in outreach and recruitment on an ad hoc basis, but one designated person now coordinates a four-part outreach strategy (with each part having its own staff lead): (1) recruiting staff and students from the

Washington University Medical Center and undergraduate

campus; (2) reaching women in the high-risk, low-income

population through community partnerships; (3) using digital

media to raise awareness about C3 in the greater community; and (4) using traditional

advertising. Women in the first category are less likely to be at high risk for unintended

pregnancy, but they are easy to reach and close to the clinic, which makes them a “convenience”

population to target. Women in the second category represent C3’s primary target population,

but they are harder to reach through the conventional methods used to recruit participants in

clinical studies. C3 staff plan to extend outreach beyond St. Louis proper to high-risk outlying

communities in St. Louis County and to East St. Louis in Illinois. The awardee’s social media

activities (Facebook posts, Twitter chats), building on those used for CHOICE, have thus far

been directed more toward the professional community than the target population. However,

staff are beginning to work on social media and digital marketing strategies (YouTube,

Instagram, Google, Craigslist) that are focused on the latter. C3 staff also plan to conduct one-

on-one, in-depth interviews with current C3 patients to better understand their perceptions of the

clinic’s advantages and limitations in the context of the other family planning and preventive

services available to them. The awardee is also considering launching a patient advisory board,

which could help inform its outreach and marketing efforts and its clinic operations.

“We are casting a very broad net, in terms of recruitment, just because that is really what we are struggling with.”

— Program staff

C3 staff have tapped Washington University’s expertise in marketing and community outreach and HCIA R2’s technical assistance to develop outreach approaches and materials. Earlier efforts to disseminate information about C3 through information tables at community events and distributing flyers across the city did not prove to be helpful. For outreach to the harder-to-reach high-risk populations, the awardee is now focusing on establishing relationships with community-based organizations that already work with those populations. One of C3’s counselors spends one day a week at The SPOT (for Supporting Positive Opportunities with Teens)—a community organization that offers preventive health services and social and educational support for teens—talking to young women who come in for family planning about contraceptive options and the services available at C3. At the time of our visit, the awardee was

about to begin a similar relationship with the St. Louis County Department of Public Health's health center, which lost its Title X status earlier this year. The awardee has recently established a "backline" to allow community-based referral sources and caseworkers from Medicaid managed care organizations to talk directly with C3 staff and set up appointments for their patients. The awardee is also beginning to develop relationships with high schools in target communities, but pregnancy prevention is not currently a priority for the schools.

The awardee's efforts to advertise the clinic's services have met with some resistance, both within and outside the university community. Because the university views C3 primarily as a clinical research study, any messages developed to recruit participants (including those on

"It was really great. We had the phone call with the Chicago [advertising executives], and we talked with our public affairs people and some people internally about advertising, and it was just like this great coming together. And so they created for us a beautiful ad, everybody liked it. We submitted it to the metro board, and the board had a problem with it because they thought it was too pro-choice and too sensitive."

— Program staff

Twitter and other social media outlets) are subject to IRB approval. The awardee has successfully argued that because patients can opt out of the study, these messages are intended to promote the clinic and not to recruit research subjects.

Messages are still reviewed by a C3 staff member to make sure they are consistent with the university's "brand," however, which generally precludes explicit or catchy messaging that might draw a younger high-risk population. With

assistance from the Washington University Faculty Practice Plan, C3 staff also developed posters that they hoped to place alongside bus and train stops in central locations, but the city's transit authority declined to place them because of a concern that advertising the services of a contraceptive choice center would invite controversy.

Getting women to the clinic after they make their first appointment has also been a challenge. No-show and cancellation rates have declined somewhat in recent months, but between one-third and one-half of the women who make an appointment at the clinic routinely fail to keep their appointments. The C3 clinic is reasonably accessible by public transportation for patients who live in St. Louis proper, but patients need a car or a ride if they live in the outlying communities. Nor is the clinic necessarily easy to find once patients get to the Washington University medical campus. At the time of our visit, there was one sign at the front of the building directing patients to the C3 clinic entrance at the building's rear, but directional aids and signage elsewhere (including the clinic entrance, identified as Division of Clinical Research) were lacking. One strategy suggested by HCIA R2's technical assistance staff was to walk through the process of getting to the clinic with patients when they call in order to help identify and work through transportation or other issues that might be a barrier.

b. Primary component: patient navigation and patient engagement

The awardee has expanded on the previous CHOICE project's offerings to include a full-time social worker. She provides acute social work services when needed, counsels women about their pregnancy options as needed, and refers patients to resources they need that are outside the C3 clinic. In addition, the social worker went through substantial training to serve as a health insurance navigator because C3, unlike CHOICE, does not provide its services free of charge. **During the program's rollout, it became quickly apparent that C3 patients needed even more help than expected to navigate Missouri's complex private and public insurance environment.** C3's social worker is now federally certified and state licensed to provide counseling, navigation, and enrollment assistance for ACA marketplace plans offered under the state's exchange, Medicaid, and the Women's Health Services Program (the Missouri Medicaid family planning waiver). At the time of our visit, C3 statistics showed that she had assisted 120 women (26 percent of those enrolled to date) and helped submit 101 applications (including 85 Women's Health Services Program applications for uninsured patients), of which 52 had been accepted.

"For a lot of women who are meeting with me, what we do is submit their application, and they come to the clinic as a self-pay patient. If they're sliding to less than 100 percent, then they're getting their services at no cost due to our Title X funding. But we're then covering the cost of that, so we retroactively reimburse. You can put patients in as 'Medicaid pending,' and then the Wash U billing system automatically checks anybody who's in this 'pending' category every 24 hours and updates it on their own."

— Program staff

C3 staff report that most patients need help with Medicaid's online application process. Medicaid staffing cutbacks also have created backlogs in the Women's Health Services Program and Medicaid approvals. Currently, uninsured patients can receive clinical services at C3 while they wait for their application to be processed. Patients whose incomes are over 100 percent of the FPL pay a fee based on the Title X sliding scale, and the fee is reimbursed once the application is approved. One of C3's co-directors, who is chair of the oversight committee for MO HealthNet (Missouri's Medicaid program), is working through personal contacts to get the agency to agree to "presumptive eligibility" for the clinic's applicants, so the clinic can waive the patients' Title X out-of-pocket costs (assuming their Medicaid application is approved).

C3 staff note that, in addition to the complexity of the insurance navigation process, asking a patient about her insurance and financial status as part of the enrollment process (a requirement of Title X reporting)—which was not necessary in the CHOICE project—changes the nature of frontline staff's initial interactions with patients in a way that can be uncomfortable for both.

The awardee developed its basic approach to patient engagement under the CHOICE project, which used trained non-clinicians to (1) walk women through the informed consent process; (2) enroll them in the study (or, in the case of C3, allow them to opt out); (3) educate them about a variety of contraceptive methods and the pros and cons of each; and (4) help them make an informed choice based on their personal circumstances and needs. The awardee appears to be implementing this core component essentially as it was developed under CHOICE. Private

consulting rooms are set up for this purpose, stocked with laminated fact sheets, 3-D anatomical models, LARC models, and other informational materials. Patients must go through this process to be counted in C3's enrollment statistics.

c. Primary component: direct care provision

In providing clinical services to patients, C3 also follows the basic model of care developed under the CHOICE program. After providing a urine sample to rule out pregnancy, the patient meets with the contraceptive counselor to enroll, provide informed consent, receive counseling on contraceptive options, and review her medical history. The contraceptive counselor updates the trained clinician (physician or nurse practitioner), who reviews the patient's clinical history and lab results to rule out any factors that would contraindicate use of a given contraceptive method and provides the service. A central feature of the CHOICE model as implemented at C3 is same-day service, including same-day insertion of LARCs, which are stocked at the clinic. One nurse practitioner has received special training from the manufacturer of the new-to-market, low-cost Liletta IUD; she now trains other clinicians at C3 and elsewhere on its use. The staff's prior experience with the CHOICE program has also familiarized them with the workflow so that support staff can fill in for each other, if need be, to facilitate the process.

The need to deal with billing and insurance affects workflow in ways that may undermine C3's ability to provide timely service. C3 staff have tried to work around this by providing stop-gap contraceptive services while insurance applications are pending, or (as noted earlier) by providing services under Title X that can be reimbursed after a patient's Medicaid applications are approved. However, staff note that getting through to insurance companies to secure prior approval, as some commercial insurers require, can take hours. At the time of our visit, the patient volume was low and staff reportedly had enough time to help patients resolve these issues. The staff's obvious commitment to C3's mission also meant it was a point of pride for them to do as much of this as they could. Still, some staff members wondered if they would be able to deliver the same level of service once patient volume increased.

Developing the operational infrastructure to support billing, reporting, and research requirements has also been a challenge for C3 staff at all levels. The awardee was able to turn to Washington University Medical Center to train frontline staff on the use of its electronic medical record (Allscripts) for billing purposes, but that system does not lend itself to gathering or retrieving the data needed for research or to meet Title X or HCIA R2 reporting requirements. This has entailed developing (and continually adapting) separate systems for gathering, storing, and retrieving data, which has complicated everyone's job. Some staff noted that it was easier to generate the statistics needed for reports by hand, rather than try to figure out ways to retrieve data from multiple systems. As C3 staff try to work these issues out, frontline staff have sometimes been frustrated by what seem to be continually changing policies and procedures. Communication has reportedly improved recently, however. C3's managers actively solicit input from frontline staff about ways to improve the management of the clinic's research, operational,

and billing data. C3's leaders also hope that the medical center's planned conversion to Epic software will offer more flexibility.

3. How does the awardee make decisions about program-related changes?

C3's core management team routinely monitors data on the patients it recruits and enrolls, including, demographics (age, race and ethnicity, income); source of referral; place of residence; and appointment cancellation and no-show rates. Given its current focus on recruitment, the management team uses these data to gauge the success of recruitment strategies and make adjustments as warranted. As noted, C3 staff have also made use of CMMI's technical assistance to HCIA R2 awardees to explore strategies to recruit more patients. The awardee also gathers data on its enrolled patients' insurance and income status, which are required for Title X reporting as well as internal planning. These data have confirmed the need for the awardee to directly address uninsured women's financial barriers to access.

The management team also pays close attention to interim program outcomes, focusing on LARC uptake in particular as a core measure of its short-term success. Other key operational metrics that are routinely monitored include (1) same-day initiation of contraceptive method; (2) median time from clinic arrival to clinic departure; (3) patient satisfaction with the counselor, clinician, and front desk staff (measured by surveys completed at the end of each clinic visit)—which C3 staff also use to identify and address issues of concern to individual patients; and (4) staff satisfaction with teamwork and communication (through the Team STEPPS surveys). Staff members also propose to conduct one-on-one, in-depth interviews with C3's patients to inform the clinic's outreach and recruitment efforts and identify ways to improve its operations.

"Whenever we have [new policies or procedures] I send out an email to everybody. And then we have biweekly staff meetings, so we go over it during those meetings, and then we also have a biweekly research assistant forum where we talk about what some of the struggles are, how we can help them. So I try to get feedback from staff, and then take that feedback to our core [leadership] meetings to say, 'Here's what the staff has feedback for, and how can we fix it so that it's easier for them?'"

— Program staff

Although many C3 staff members have been working together since the CHOICE program, new and evolving policies and procedures for billing and insurance reportedly caused some confusion and frustration. The awardee has begun to have separate meetings for frontline and research staff so they can raise issues of concern that are brought to the attention of the core management team. This ensures that staff feedback is routinely incorporated into the core management team's meeting agendas. The awardee also regularly convenes all staff to brainstorm solutions to problems that have been identified. These sessions have resulted, for example, in new approaches to recruitment and better processes for data collection, management, and quality assurance.

4. To what extent has the awardee begun to plan for or implement payment reforms?

Although their thinking about payment reform is still in its early stages, C3's policy leaders are moving away from the idea of bundled payment to explore value-based payment incentives—which was prompted by Missouri's decision not to expand Medicaid and by the

fragmentation of the reimbursement and delivery systems. The aim would be to reward providers for the upfront costs of delivering highly effective contraceptive services, which would be offset by downstream savings in avoiding unintentional pregnancies and the resulting births. Medicaid, as the major payer for services to women in the high-risk population, would be a central target of such reforms. C3's leaders also recognize that the clinic's financial sustainability requires serving a large enough proportion of commercially insured women to offset the low rates of fee-for-service reimbursement by Medicaid, at least under the current payment structure. This requires extending the case for return on investment to private payers as well. Besides focusing on C3's financial viability, the objective is to design a payment model that would be transferable to other health care settings, such as federally qualified health centers with limited resources. Translating research findings is a priority for program leaders.

D. Impact evaluability assessment

After reviewing program documents and interviewing the awardee's staff, we conclude that significant challenges will limit our ability to carry out a rigorous evaluation of the C3 program. These include the existence of the CHOICE program, which contaminates the C3 baseline measures; data limitations; and low enrollment numbers for Medicaid patients. Therefore, for this evaluation, we propose carrying out aggregate comparisons in key outcomes over time between program participants, the broader population of women in Missouri and Illinois, and women in other geographic regions. We will use survey data to perform this analysis. We will present both unadjusted descriptive statistics on these outcomes over time and adjusted statistics that take into account women's demographic and health characteristics when possible.

E. Next steps

We look forward to working with C3's leaders and staff for the rest of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

Our next steps in the quantitative analysis include exploring the usability of data from three national surveys to produce unadjusted and adjusted descriptive statistics of changes in outcomes

over time for women in Missouri, Illinois, and other states more broadly. We will also use awardee data to analyze the outcomes of women enrolled in C3 specifically.

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APPENDIX B.38

WISCONSIN DEPARTMENT OF HEALTH SERVICES

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REPORT

APPENDIX B.38

HCIA Round Two Evaluation: Wisconsin Department of Health Services

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014 – August 31, 2015)

Successes

- Between its launch date, September 1, 2014, and August 31, 2015, the Special Needs Program for Children with Medical Complexity (SNP) enrolled 350 direct program participants (111 percent of its Year 1 target) and 53 indirect program participants (41 percent of its Year 1 target).
- Both participating hospitals launched the intensive and ambulatory models by the end of Year 1 (August 2015).
- Pediatric primary care practices, specialty providers, and community organizations became familiar with the newly implemented SNP at the University of Wisconsin Health – American Family Children's Hospital; the program started to receive a steady stream of referrals by the end of Year 1.
- The Wisconsin Department of Health Services made progress on the payment model by encouraging the hospitals to systematically collect data on time staff spent with program participants. This information will inform rate setting for the Wisconsin Department of Health Services' capitated model. Hospitals reported consistently tracking this information.

Challenges and strategies to address them

- Challenges recruiting staff delayed progress at both hospitals. To address this challenge, the hospitals increased efforts to recruit staff at all levels and shifted staffing to fill gaps.
- Wisconsin Department of Health Services and its partners introduced the ambulatory model to include participants with less complex medical needs. However, early experiences with the model indicate that ambulatory model participants tend to have as complex needs as children in the intensive model. The complexity of participants' clinical and social problems in the ambulatory model led program staff to increase staff-to-participant ratios.
- Adapting electronic medical records (EMRs) to facilitate data collection and decision making proved challenging in both hospitals. Despite efforts to engage internal stakeholders to modify the EMRs, this challenge was unresolved as of the end of Year 1.

Lessons learned

- The SNP patient population is highly variable, which creates challenges for matching children to the appropriate model and level of intensity for support. As the members of the awardee team gain experience with the program, they are working to identify the patients who will benefit most from the SNP and from the appropriate model and level of services. This experience will help to inform program revisions and the payment model.
- Staff for the SNP need to have a unique combination of skills and attitude that may not be typical to other pediatric or hospital positions. Staff involved in implementing the SNP describe a tension between carefully adding the right staff and enrolling enough participants to meet enrollment targets in the award period.
- Although the awardee team is committed to close alignment in the implementation of the SNP at the two hospitals, implementation varied due to characteristics of the care team and hospital systems.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on August 26 to 28, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardees self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31, 2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children's Health Insurance Program (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery system and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee's early implementation experiences
3. Assess the facilitators of and barriers to each awardee's success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Special Needs Program for Children with Medical Complexity¹ (SNP), which is being implemented by the Wisconsin Department of Health Services. In this document (referred to as a "narrative"), we examine this program's first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of the Wisconsin Department of Health Services' SNP, including initial implementation experience, initial challenges to and successes with enrollment, and the engagement with, and participation of, its partners. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee's application, initial discussions with awardee staff, and key informant interviews conducted during a recent site visit to the Wisconsin Department of Health Services and its partners, the Children's Hospital of Wisconsin (CHW) and the University of Wisconsin Health – American Family Children's

¹ Medical complexity is defined as having chronic conditions involving three or more organ systems requiring ongoing care from three or more specialists.

Hospital (AFCH). We also reviewed the awardee's reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of the SNP, this report addresses four questions:

1. How effectively has the program been implemented?
2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
3. How do the awardee and implementing sites make decisions about program-related changes?
4. To what extent have the awardee and implementing sites begun to plan for or implement payment reforms?

We also provide a brief summary of the Wisconsin Department of Health Services' impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

The SNP was first implemented as a comprehensive program for medically complex patients who have high tertiary center use at CHW in Milwaukee, Wisconsin, in 2002. The HCIA R2 funding allowed the Wisconsin Department of Health Services to enhance the existing SNP at CHW and begin the enhanced SNP at AFCH in Madison, Wisconsin.²

Launched on September 1, 2014,³ the enhanced SNP includes care management/medical co-management,⁴ care coordination, patient navigation, and patient and family engagement. Care teams consist of physicians, nurse practitioners (NPs), registered nurse care coordinators, care coordination assistants,⁵ and administrative assistants. Physicians and NPs primarily engage in

² In this document, "the SNP" refers to the program at both CHW and AFCH. However, at AFCH, the program is called the Pediatric Complex Care Program.

³ Launch date as defined by Wisconsin Department of Health Services. CHW initially implemented the SNP based exclusively on the intensive model, a comprehensive inpatient and outpatient program for medically complex patients with high tertiary center use, in 2002. The AFCH launched a similar program focused on children with medical complexity in March 2014, which enrolled 25 to 30 patients before the HCIA R2 funds were awarded. After receiving the award, AFCH aligned its program with the SNP at CHW.

⁴ "Care management" is the term used by the HCIA R2 awardees to describe patient-focused care management services provided to individuals with medical complexity; we use the term to represent the "medical co-management" component of the SNP.

⁵ The Wisconsin Department of Health Services originally proposed to include "lay navigators" to support nurse care coordinators and provide support to patients and families. Now, the awardee team refers to this role as "care

medical co-management, which includes consulting in the inpatient and ambulatory settings, facilitating transitions in and out of the hospital, and providing 24/7 access for participants and their families. Nurse care coordinators and care coordination assistants assume primary responsibility for care coordination services. Nurse care coordinators play a large role in educating participants and families about caring for the participants' conditions at home; they also function as the primary points of contact for families and facilitate communication between specialists and primary care providers (PCPs). Care coordination assistants ensure that follow-up appointments are scheduled, coordinate with community resources, and refer medical questions to providers and nurse care coordinators. Administrative assistants conduct the initial screening of individuals referred to the program, access clinical data to make it easier for program staff to make decisions about enrollment, and provide other support functions. Working closely together, the care team:

- Provides medical consultation during hospitalizations, emergency department (ED) visits, and other ambulatory office visits
- Assists with discharge planning and transitions to and from the hospital
- Provides post-discharge follow-up
- Visits participating families at six-month intervals
- Attends visits to specialists and facilitates communication across providers
- Coordinates care across settings and community resources
- Educates patients and families about care transitions and care for participants' conditions at home

The enhanced SNP includes three elements that were not part of the original intensive⁶ model implemented at CHW:

1. **New ambulatory model.** Building on the intensive model, which includes children with high inpatient use, the Wisconsin Department of Health Services and its partners added the ambulatory model to expand services to a pool of children with medical complexity, high ambulatory use, and moderately high inpatient use. The awardee originally anticipated that both sites would implement the intensive model, whereas only CHW would implement the ambulatory model. However, both sites are operating both models. Table 1 presents key characteristics of the two models.

coordination assistants." CHW staffs nonmedical professionals, such as administrative assistants, as well as certified nurse assistants in this role, while AFCH recruits individuals with backgrounds similar to medical assistants.

⁶ The awardee referred to the intensive model as the "inpatient" model in its application. To convey the idea that the model addresses the care continuum, the awardee now refers to the model as "intensive" rather than "inpatient."

2. **Three tiers of medical co-management and care coordination, based on participant need.** All participants start in tier 1, in which the need for medical co-management and care coordination services is the most intense. As the need for medical co-management and coordination lessens, participants can move to tiers 2 and 3, in which intensity of services gradually diminishes.
3. **New care coordination assistants.** The Wisconsin Department of Health Services added care coordination assistants to help facilitate health care navigation and to provide education to participants and their families. Based on CHW's experience, the awardee added this role to expand the capacity of nurses and to help the care team maintain contact with participants in order to prevent withdrawals from the program.

Table 1. Key characteristics of the intensive and ambulatory models of care management/medical co-management and care coordination

Key characteristics	Intensive model	Ambulatory model
Enrollment criteria	<ul style="list-style-type: none"> Children with (1) two or more hospitalizations totaling at least 10 days or (2) 20 or more clinic visits in a 12-month period 	<ul style="list-style-type: none"> Children with (1) one or more hospitalizations of at least 5 days or (2) 10 or more clinic visits in a 12-month period "Graduates" from NICU and PICU: one hospitalization lasting at least 5 days and anticipated future inpatient use
Primary purpose	To reduce the length of stay and facilitate transitions in and out of the hospital	To prevent ED use and hospital admissions
Targeted number of participants over the three-year cooperative agreement (across sites)	595	1,205
Ratio of participants to nurse care coordinator	1:60	1:250
Examples of activities	<ul style="list-style-type: none"> Making rounds as part of inpatient care and consultation in ED and ambulatory visits Education for participants and families Facilitation of decision making surrounding discharge, coordination of discharge planning, and support for transitions to the home 	<ul style="list-style-type: none"> Making rounds as part of inpatient care (when participant is admitted) and consultation in ED and ambulatory visits Education for participants and families Coordination with PCPs and specialists to develop care plans

Source: Qualitative analyses of (1) the Wisconsin Department of Health Services' application, (2) self-reports submitted by the awardee to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015) and (3) data gathered during initial telephone discussions with the Wisconsin Department of Health Services and our site visits to the awardee and its partners on August 26 to 28, 2015

NICU = neonatal intensive care unit; PICU = pediatric intensive care unit

The Wisconsin Department of Health Services and its partners hypothesize that enhanced care management/medical co-management and care coordination for the SNP population will lead to the following outcomes: (1) reduced rates of preventable hospitalizations and ED visits, and shorter hospital stays; (2) enhanced access to necessary outpatient services; and (3) lower costs. The awardee and its partners also expect to improve family and PCP satisfaction by shifting the burden of care coordination to the SNP. By adding the new ambulatory model, the Wisconsin Department of Health Services and its partners intend to identify participants before they have a catastrophic event to either prevent the event or lessen its negative effects. Furthermore, the SNP includes infants identified in the neonatal intensive care unit (NICU) to prevent hospitalizations. Other key characteristics of the awardee's program are described in Table 2.

The purpose of the first site visit to the Wisconsin Department of Health Services and its partners was to collect detailed information on staff and stakeholder experience; on progress to date in implementing the SNP; on changes to the SNP; on facilitators of as well as challenges and barriers to implementation; and on updates to the payment model.

Table 2. Wisconsin Department of Health Services: SNP characteristics at a glance

Program characteristic	Description
Purpose	SNP provides three tiers of care management/medical co-management and care coordination intensity for children with medical complexity through two models of care: (1) an intensive model and (2) an ambulatory model.
Components	<ul style="list-style-type: none"> • Care management/medical co-management (primary). Three tiers of care management match participants' needs. The care team has an extensive knowledge of the participants' conditions and serves as a resource for families and medical providers. The care team provides consultation and medical co-management in the inpatient and ambulatory settings and 24/7 accessibility to facilitate transitions in and out of the hospital and to optimize care at home. • Care coordination (inpatient transitional and outpatient) (primary). Three tiers of care coordination match participants' needs. The care team provides coordination across specialists, facilitates discharges and outpatient visits, and serves as the primary point of contact for the families of participants. • Patient navigation (primary). Care coordination assistants support nurse care coordinators and provide patient-centered guidance on navigating across settings, services, and community resources. • Patient and family engagement (primary). The care team educates participants and their families on transitions and how to best care for the participants' needs at home.
Target population	The SNP targets children with medical complexity, defined as having chronic conditions involving three or more organ systems requiring three or more specialists. Children are recruited to either model based on enrollment criteria. The intensive model targets children with two or more hospitalizations totaling 10 or more hospital days, or with 20 or more clinic visits within a 12-month period. The ambulatory model targets children with one or more hospitalizations of five or more hospital days, or with 10 or more clinic visits within a 12-month period. The ambulatory model also includes graduates from the NICU/PICU with initial hospitalizations lasting five or more days and anticipated future inpatient use.

Table 2. (continued)

Program characteristic	Description
Theory of change/theory of action	The awardee and its partners hypothesize that enhanced care coordination for children with medical complexity will lead to the following outcomes: (1) reduced rates of preventable hospitalizations and emergency department (ED) visits and shorter hospital stays; (2) enhanced access to necessary outpatient services; and (3) lower costs. The awardee also expects to improve family PCP satisfaction by shifting the burden of care coordination to the SNP.
Payment model	Shared savings, per capita care management payment In its initial phase, to start six months prior to the end of the cooperative agreement, the planned payment model will consist of payments of monthly fees for care coordination services from Medicaid and potentially commercial insurers for participants enrolled in the SNP. In phase 2 (which will start after the end of the cooperative agreement), the model will incorporate shared savings such that hospitals can share in program savings but would not bear risk for costs exceeding budgeted costs.
Award amount	\$9,444,864
Launch date ^a	September 1, 2014
Setting	State Medicaid agency; two tertiary acute care children's hospitals
Market area	CHW and AFCH are located in metropolitan areas (Milwaukee and Madison, Wisconsin, respectively). CHW serves patients from across Wisconsin, the Upper Peninsula of Michigan, and northern Illinois. AFCH serves patients throughout Wisconsin and from Minnesota, Illinois, and Iowa.
Market location	Although both hospitals are located in cities, they treat patients from across the state and coordinate care with providers located near participants' homes.
Core outcomes	<ul style="list-style-type: none"> • Improve participants' quality of life • Improve PCP satisfaction • Improve patient and family satisfaction • Reduce ED visits • Reduce hospitalizations • Decrease total hospital days • Reduce errors that occur during transitions of care, as measured by rates of follow-up after hospitalization at 7 days and 30 days post-discharge • Decrease total cost of care as measured by the per-member per-month index

^aThe awardee's program became operational as of this date.

NICU = neonatal intensive care unit; PICU = pediatric intensive care unit

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the Wisconsin Department of Health Services' application, (2) self-reports submitted by the awardee to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015) and (3) data gathered during initial telephone discussions with the Wisconsin Department of Health Services and our site visits to the awardee and its partners on August 26 to 28, 2015. For our document review, we used a standardized tool to abstract key data from the application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we interviewed the awardee's program leaders at Wisconsin Department of Health Services and leaders and frontline staff at CHW and AFCH, the two hospitals implementing the SNP. A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts describing implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review as necessary, the evaluation team synthesized the material into this narrative of the Wisconsin Department of Services' implementation experience.

C. Findings

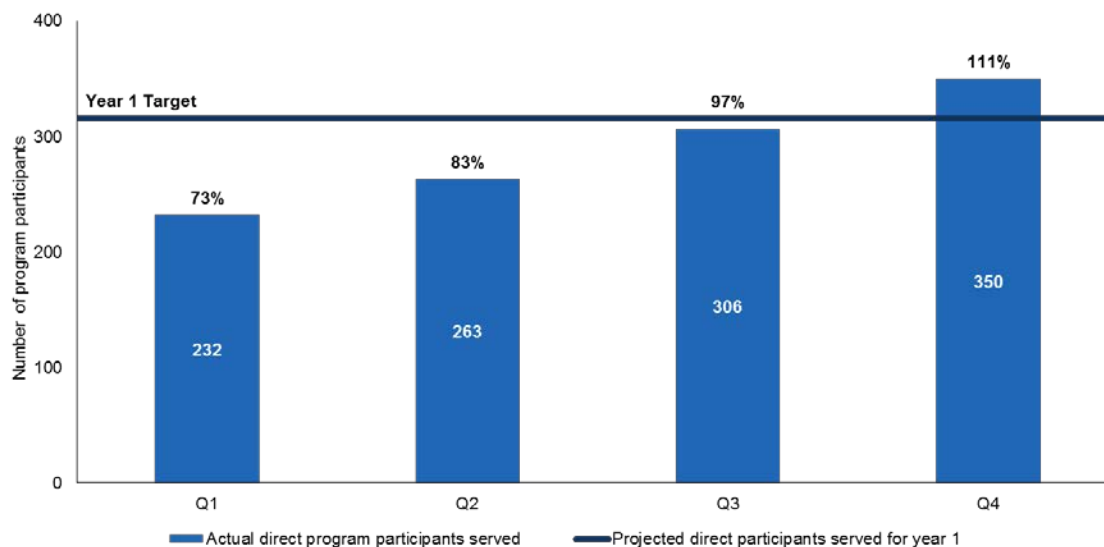
1. How effectively has the program been implemented?

By the end of Year 1, the SNP had several successes, including the following:

- As shown in Figures 1a and 1b, the SNP enrolled 350 direct program participants (111 percent of its Year 1 target) and 53 indirect program participants (41 percent of its Year 1 target).⁷
- Both hospitals, including AFCH, had operational intensive and ambulatory models. AFCH was not originally slated to implement the ambulatory model. However, as pediatric primary care practices, specialists, and community organizations referred patients to the program at AFCH, the team noticed that the patients fit the eligibility criteria for the ambulatory model and implemented both models to accommodate the patients' needs.
- Pediatric primary care practices, specialty providers, and community organizations gained familiarity with the newly implemented SNP at AFCH; the hospital had a steady stream of program referrals by the end of Year 1.
- The Wisconsin Department of Health Services successfully encouraged hospitals to systematically collect information about time spent with participants by type of staff, model, and tier to inform rate setting for the capitated payment model; staff at both hospitals reported recording time spent on care management and coordination.
- Awardee and hospital program leadership described effective collaboration among the members of the project team.

⁷ The Wisconsin Department of Health Services covers the costs of program participation for Wisconsin Medicaid or CHIP beneficiaries through HCIA R2 funding and classifies these participants as direct. Wisconsin Department of Health Services does not cover program costs for participants who are not Wisconsin Medicaid or CHIP beneficiaries; instead, CHW and AFCH cover the costs of participation for these participants. Because of this arrangement, Wisconsin Department of Health Services classifies these participants as indirect.

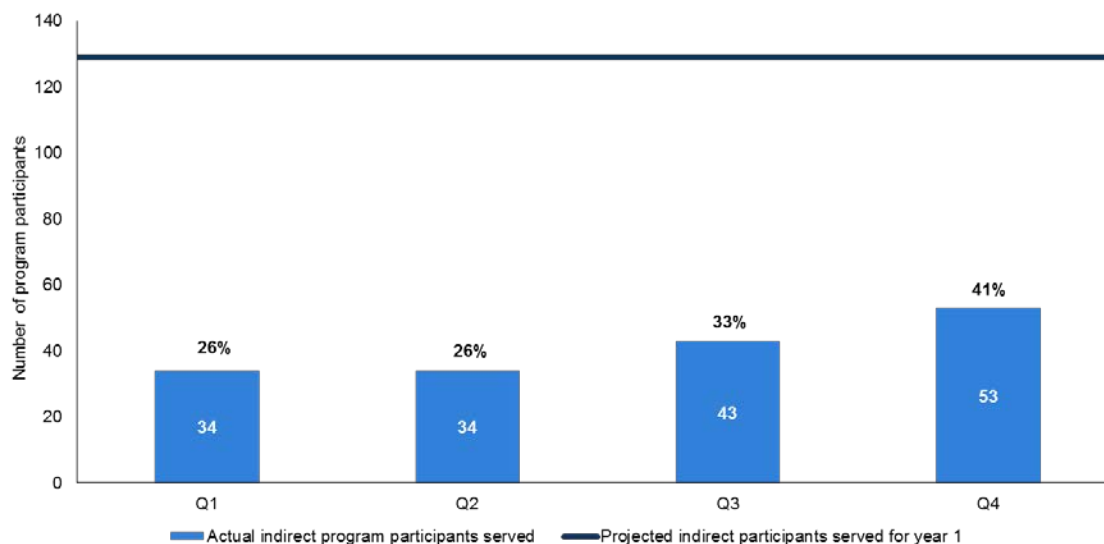
Figure 1a. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Note: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants who have received services directly funded by the HCIA R2 cooperative agreement from program launch through the fourth program quarter.

Figure 1b. Projected versus actual cumulative indirect participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014 - August 2015.

Note: Projected indirect participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Indirect program participants refers to the total number of unique participants for whom the awardee has provided assistance through support to service providers from program launch through the fourth program quarter.

Participants in the ambulatory model tend to have as complex needs as participants in the intensive model, which was unanticipated and raises operational questions about the overall program. Originally, program leaders thought carefully about the enrollment criteria for the models in order to distinguish between patients who were more fragile and frequent users of inpatient care and patients who had complex medical needs but were less frequently hospitalized. Program leaders at both hospitals acknowledged that the enrollment criteria for both models may not be exactly right but noted that the criteria appear to identify patients in need of the SNP services. As the models were implemented, the distinction between them became less clear given the unanticipated complexity and fragility of participants in the ambulatory model. This finding influenced staffing decisions including, for example, the decision to increase the staff-to-participant ratio in the ambulatory model to accommodate higher-than-anticipated demands on the staff. It also raised questions about how to appropriately manage the intensity of support provided by SNP staff over time. As of the end of Year 1, each tier had a targeted duration; however, leaders noted the need to foster independence from the program—by scaling down intensity as appropriate—while also ensuring participants are not prematurely graduated. The awardee described being eager to learn more about how to match participant needs to the appropriate model and intensity of support provided over time. Efforts to monitor participants in these two models—including how participants differ and how they are similar across the models—are important for informing the program going forward.

Both sites encountered significant barriers related to staffing that delayed complete implementation of the SNP as planned. Challenges identifying appropriate staff occurred at all levels: physicians, NPs, nurses, and care coordination assistants. Many interviewees noted that working with this patient population requires acceptance of its medical complexity and vulnerability, the ability to take a holistic view for each patient's health, intellectual curiosity, the ability to manage competing demands, and strong interpersonal skills. To address this challenge, the hospital teams actively recruited new staff and shifted responsibilities among existing team members. However, staff at both hospitals noted that the risks of bringing on new team members who are not the best fit outweigh the risks of missing SNP enrollment targets during the award period.

"It is hard to find people who want to do this kind of work. And then, we have chosen to say, 'We need people who want to do this work,' rather than the alternative approach, [which] would have been to say, 'We are going to tell everyone in general [pediatrics] they have to do this' We thought that would be a bad idea for the program and a bad idea for the families."

— *Participating physician*

Three aspects of the program were modified during early implementation: (1) the enrollment target, (2) the staff-to-participant ratio, and (3) the use of lay navigators.

1. **Enrollment target.** Staff revised enrollment targets downward from 2,040⁸ participants over the three years to 1,800,⁹ primarily due to delays in implementing CHW's ambulatory model, which were caused by delays in ramping up SNP staffing. Despite these delays, awardee leaders noted that the program was on track with its revised direct participant enrollment target. When the proposal was being written, the Wisconsin Department of Health Services based its enrollment targets on an estimate that two-thirds of the program participants would be Wisconsin Medicaid beneficiaries. In actuality, about 81 percent to 86 percent were Medicaid beneficiaries in Year 1—which means that, although overall numbers are lower than anticipated, a higher proportion are direct program participants than anticipated.
2. **Staff-to-participant ratio.** The hospitals revised their staff-to-participant ratio for the ambulatory model from one nurse care coordinator for every 500 participants to one for every 250 participants. The awardee team made this change because of feedback from program staff at the Medical Home Clinic for Special Needs Children at Arkansas Children's Hospital and because of early experiences with the ambulatory model suggesting that participants in this model are as complex as intensive model participants.
3. **Use of lay navigators.** Both hospitals came to view the role of care coordination assistants as benefitting from familiarity with the clinical setting, rather than “lay” navigators as originally proposed. CHW initially staffed nonmedical staff, such as administrative assistants, in this role and now includes medical assistants and certified nurse assistants in this role, while AFCH recruits medical assistants.

Despite a shared philosophy and close collaboration between teams at the two hospitals, the program's implementation varied across the two sites. Awardee leaders noted that the programs implemented in both hospitals should be the same, to the extent possible, for the purposes of measuring impact. However, as of the end of Year 1, the two hospitals' implementation of the program differed in three key ways.

“Honestly, I don't think we pay a ton of attention to [the model they are assigned to] because it's been a nonissue. And our philosophy had always been, if we have the capacity to enroll someone, it's stupid for us to sit around and not do anything when there are patients we could be helping.”

— *Participating physician*

CHW and AFCH manage the intensive and ambulatory models differently. CHW staffs its models and manages its program participants in each model separately, whereas AFCH staffs the two models and manages participants in each model in an overlapping fashion. At CHW, where the caseload is larger than at AFCH, the care teams are separated by model to maximize efficiency and

ensure the care team is highly knowledgeable about the caseload. At CHW, the care teams dedicated to the different models interact in weekly team meetings. In contrast, AFCH does not

⁸ This target included the existing SNP participants at both hospitals before the cooperative agreement period started.

⁹ This revised target includes participants enrolled prior to September 1, 2014.

separate staff based on model and described team members as being highly knowledgeable about the current caseload across the models. As AFCH expands its program and enrollment numbers, hospital program leaders indicated that this approach may change.

Processes for decision making about participant enrollment also varied between the two sites.¹⁰ At CHW, the full team considers potential candidates, which are first screened by an administrative assistant, for the program in weekly team meetings. However, for decision making about NICU patients, only a physician and care coordination assistant decide whether to invite the patient to enroll in the program. On the other hand, at AFCH, a nurse care coordinator first evaluates referrals and then meets with the medical director to determine whether to invite a patient to enroll in the program.

Because of differences in the availability of programs that meet the needs of NICU patients, the NICU is a primary source of patients at CHW but less so at AFCH. Hospital program leaders indicated that AFCH has a growing neonatal follow-up infrastructure outside of the SNP, which meets the needs of most NICU graduates. However, when patients' needs cannot be met outside of the SNP, AFCH program staff would enroll NICU graduates. Alternatively, CHW described a well-established collaboration between hospitalists and the NICU that facilitates the recruitment of NICU patients to the program; CHW also has a care team dedicated to recruiting NICU graduates to the ambulatory model.

2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges (by component), including the effectiveness of those strategies?

The components of the SNP include the following:

- **Primary component: care management/medical co-management.** The medical co-management team, composed of physicians and NPs, provides consultation in the inpatient and ambulatory settings, supports medical decision making, and provides 24/7 accessibility to facilitate the transition in and out of the hospital and to optimize care at home
- **Primary component: care coordination.** The care coordination team, consisting primarily of nurse care coordinators and care coordination assistants, facilitates communication across specialists, ensures that follow-up specialist and care coordination visits occur, and functions as the primary points of contact for patients' families.
- **Primary component: patient navigation.** The care coordination team provides patient-centered support for navigating across specialists, settings, services, and community resources.

¹⁰ Teams at both hospitals evaluate each referral to the program to verify alignment with the enrollment criteria, such as the definition of medical complexity and historical utilization patterns. Parental interest in enrollment is also a criterion for enrollment.

- **Primary component: patient and family engagement.** Providers and nurse care coordinators educate participants and their families about navigating the system and caring for the participants' conditions at home.

Although we are distinguishing between these components for evaluation purposes, the program staff consider them to be part of an integrated program. As a result, the key program facilitators and barriers that we discuss below affect all components.

The patient population is highly complex and vulnerable, which acts as a facilitator of and a barrier to implementation progress. Awardee leaders noted that this population is costly to the Medicaid program; as a result, there may be sufficient political will to implement innovations that promise to reduce costs. However, accurately matching participants to the right model of care remains a challenge because early experiences with the ambulatory model suggests that the needs of patients enrolled in this model are as intense as the needs of patients enrolled in the intensive model. Because staff must have the relevant background and be comfortable enough with children who have complex conditions, the process of finding and hiring appropriate staff has gone slowly. As a result, enrollment has been slower than expected.

Factors specific to the awardee team and internal hospital teams also influence program implementation, including close

"If we're feeling like we're taking on too much, then we definitely meet and we look at things and we see how we can do this more effectively while trying to meet the hiring need and the additional patients."

— *Participating NP*

collaboration, a history of working together, clear team roles, and program champions. Many staff described the productive collaboration across the awardee and hospitals. Across hospitals, CHW has a 13-year history with the SNP to leverage, and CHW and AFCH have a history of collaboration on

other initiatives. Within hospital teams, interviewees described highly integrated, close-knit teams as facilitators. The Medicaid program and both hospitals have prominent program champions.

Institutional-level supports also facilitate progress, including leadership buy-in, flexibility, and organizational structure. In CHW's experience, the SNP reduces length of stays, which under current reimbursement systems may reduce hospital revenues. As such, commitment from hospital leaders to the goals of the SNP, such as improving participant quality of life, is critical for making the program an organizational priority despite potential revenue losses. One clinical leader at AFCH described the importance of institutional flexibility—for example, by allowing the SNP to have the physical space and ability to schedule appointments with participants on an as-needed basis, which makes for a more family-centered program. Finally, CHW participants described how the team structure flows from the organizational structure. Historically, the physicians were employed by the Medical College of Wisconsin and the nursing staff were employed by the Children's Hospital of Wisconsin. Efforts of the medical director and program manager to work seamlessly—for example, by delivering consistent messages to their teams—helped to address a potential barrier caused by this employment structure.

Program leaders at the hospitals continue to struggle with adapting their electronic medical records (EMRs) for the purposes of the SNP, which affects implementation of the SNP. Staff at both hospitals tried to adapt their EMRs to facilitate data collection and decision support—for example, by adding flow sheets. However, engaging the commitment of the appropriate people within the health system and at the EMR vendor to implement changes remained a challenge at the end of Year 1. There is a dilemma about whether the EMRs should be modified to systematically collect data elements specific to the SNP because the EMR is intended to serve clinical purposes. As one team member at CHW explained, some of the information that is important for monitoring SNP implementation, such as phone calls to families, does not have a salient clinical purpose. At AFCH, a clinical lead described institutional barriers to using the EMR to collect data elements to facilitate monitoring the program. For example, the team tried to identify staff other than nurses to enter needed data elements, but faced challenges related to permissions for use of the EMR. Because of these barriers, the team collects data elements needed to monitor the program separately from the EMR. Despite these challenges, staff at both hospitals complete daily time logs—manually entered from paper into a standard electronic format at CHW and through an alternative data entry system at AFCH; hospitals report these data to the Wisconsin Department of Health Services in a standardized, electronic, spreadsheet template.

External stakeholders are an important source of referrals to the program, and the engagement of stakeholders, such as specialists, is critical for providing effective medical co-management and care coordination services. Because the AFCH program is new, the hospital team invested considerable energy engaging PCPs, specialists, and other external stakeholders such as community services and advocacy organizations. AFCH staff noted that as the reception in the community became more positive and as referring providers became more familiar with the SNP, the volume of patient referrals increased.

3. How do the awardee and implementing sites make decisions about program-related changes?

The Wisconsin Department of Health Services and the participating hospitals described a number of self-monitoring metrics. As of the end of Year 1, both sites were creating data monitoring systems to track the following:

- Program referrals, enrollment, and withdrawals, by participant type (direct or indirect)
- Staff time spent on care management, care coordination, and patient navigation, by type of staff, model, and tier
- Staff care coordination activities, including follow-up phone calls within 72 hours of discharge that included medication reconciliation, discussion of the discharge plan, and scheduling of follow-up appointments
- Patient utilization data, including hospitalizations, hospital readmissions, and ED visits

Both the awardee and the participating hospitals reviewed the data reported by each hospital, identified common elements, and developed a standardized reporting spreadsheet. Hospitals submit standardized reports to the awardee on a monthly basis. As of August 2015, based on hospital reporting, the awardee populates spreadsheets used by Lewin.

“[The program self-monitoring data is] a lot more related to our clinical data, our process data, and parent-reported data that we’re looking at on a regular basis to see sort of where our performance is at and if it’s where we would like it to be . . .”

— Hospital research director

In addition to the aforementioned data, the awardee team plans to use claims and chart data to monitor the program. However, the lag in the claims data—up to 12 months—can preclude its usefulness in informing day-to-day operations. The hospitals’ chart data provide a richer source of program monitoring data. The hospitals described using medical chart data in program monitoring—

for example, to try to identify causes for hospitalizations—which can inform program improvements. Because of the importance of the medical chart data, both hospitals tried to leverage their EMRs to facilitate data tracking but neither hospital had been successful by the end of Year 1.

In addition, the hospitals administer the following surveys to monitor the effects of the program on participants:

- Patient and family satisfaction survey (annually)
- PCP satisfaction surveys (annually)
- Pediatric Quality of Life Inventory (PedsQL)¹¹ (semiannually)

These surveys provide information about the impact of the SNP on quality of life and on the family overall and will be used to inform program adjustments.

In addition to data monitoring, SNP staff use meetings as a forum to address challenges. The Wisconsin Department of Health Services and the hospitals meet monthly and during quarterly steering committee meetings to discuss implementation progress. Within hospitals, weekly or semiweekly team meetings include the care team and are used to address challenges to the program’s implementation.

4. To what extent have the awardee and sites begun to plan for or implement payment reforms?

The Wisconsin Department of Health Services had not implemented its payment reform model as of the end of Year 1 but had started planning and data collection. As of August 2015, the awardee planned to implement a two-phase model: (1) a payment model in which hospitals would be paid a per patient fee for care coordination services and (2) a shared savings model in

¹¹ The sites administer the PedsQL Family Impact Module.

which only the state bears the risk for costs in excess of budgeted costs but hospitals can share in cost savings. The first phase is slated to begin six months before the end of the cooperative agreement, and the second phase is planned for one year after the agreement ends. The awardee's actuaries will use the time-tracking data collected from the hospitals to set rates for the capitated payment model.

The awardee will design the shared savings model based on hospital performance on total costs of care and outcomes under capitation. Wisconsin Department of Health Services will use the data from the capitated payment period (September 1, 2017, through August 31, 2018) to design the shared savings model. The shared savings will be based on the total cost of care, not just the cost of care coordination services. As one representative of the Wisconsin Department of Health Services explained, hospitals have an incentive to deliver high quality, low-cost care during the capitated period because data from this period will inform the shared savings component.

Awardee leaders maintain a focus on the sustainability of the program, which means identifying ways to build payment reform into the Wisconsin Medicaid program over the longer term. For example, children with medical complexity tend to receive Supplemental Security Income and are therefore not eligible for coverage from Medicaid managed care organizations, which provide care management services. Thus, the state is considering submitting an amendment to its plan to CMS to pursue the implementation of a Medicaid health home to coordinate care for people on Medicaid with chronic conditions.¹² The awardee has experience with these amendments through the state's Health Home for Individuals with AIDS/HIV program.

Because some program participants have commercial coverage, the SNP intends to engage commercial insurers in using a capitated payment model to reimburse care management and care coordination services. However, as of the end of Year 1, the awardee had not secured any commitments from commercial insurers but planned to engage them after gaining a stronger sense of how many indirect program participants are enrolled over time and further developing the capitated payment model.

D. Impact evaluability assessment

After reviewing information in program documents and from interviews with program staff, we conclude that a rigorous impact analysis is feasible. We are pursuing a difference-in-differences design that compares pediatric Medicaid beneficiaries enrolled in the SNP at either hospital to a comparison group of beneficiaries. The treatment group will be composed of children with medical complexity who are enrolled in either the intensive or the ambulatory model at either treatment hospital.

¹² Section 2703 of the Affordable Care Act, by adding Section 1945 of the Social Security Act, authorized the establishment of Medicaid health homes to coordinate care for beneficiaries with chronic conditions.

E. Next steps

We look forward to continuing to work with the Wisconsin Department of Health Services and its partners for the remaining portion of the cooperative agreement. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include identifying all pediatric Medicaid beneficiaries in the treatment group and constructing a viable comparison group composed of beneficiaries with medical complexity who are not receiving care from either of the two treatment hospitals. Having executed the business associate agreement and memorandum of understanding, we are working with the awardee to obtain enrollment, claims, and encounter data for both treatment and comparison Medicaid beneficiaries. For the latter group, we assume that most eligibility and selection criteria can be replicated in claims. Upon construction of a viable comparison group, we can proceed with propensity score matching on key observable baseline characteristics between treatment and comparison children to maximize similarity between groups. This method provides an estimate of the mean program impact for the participants. We will produce initial impact estimates for the first one to two quarters of program operations after creating our outcome and explanatory variables. We will describe our findings in future reports.

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APPENDIX B.39

YALE UNIVERSITY

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REPORT

APPENDIX B.39

HCIA Round Two Evaluation: Yale University

August, 2016

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FINDINGS AT A GLANCE (September 1, 2014–November 3, 2015)

Successes

- Although Yale University's hiring processes, institutional review board procedures, and changes in recruiting strategy delayed implementation of the Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly (PRIDE) program, the number of new participants nearly doubled between August 2015 and September 2015, with enrollment growth expected to continue.
- Paramedics experienced in provision of emergent care expressed appreciation for the care management and assessment training provided by the PRIDE program.
- PRIDE frontline staff reported that the facilitated discussions that take place during quarterly in-person meetings break down communication barriers between emergency medical service (EMS) providers and visiting nurse agency staff, creating an atmosphere of collaboration and shared learning.

Challenges and strategies to address them

- Yale University initially targeted individuals who called 911 for a “lift assist”—help getting up after a fall—but who did not need further medical intervention. Recognizing that the enrollment rate was below projections, Yale University refined the participant criteria to include individuals concerned about experiencing a fall and broadened the recruitment approach to recruit patients after a 911 call, during an ED visit, or through self-referral.
- Some paramedics were dissuaded from joining PRIDE due to their heavy EMS work schedules and Yale University's extensive background check. PRIDE leaders engaged fire department and EMS leaders to assist with paramedic recruitment.

Lessons learned

- Recognizing that the target population was suspicious of a program involving in-home interventions, Yale University refined its approach to communicating with potential participants by designing an informational brochure, holding information sessions at senior centers and town hall events, and establishing a PRIDE call center.
- Yale University determined that 911 computer-aided dispatch data could not be used to identify potential program participants. Instead, Yale University developed an approach to leverage PRIDE partners' existing information technology systems and the availability of on-call PRIDE paramedics to enroll participants soon after a 911 call.

Note: This narrative describes the awardee's implementation experience from the beginning of the cooperative agreement through the end of our site visit on November 3, 2015. Unless otherwise noted, enrollment data are current as of August 31, 2015, according to the awardee's self-report submitted to the implementation and monitoring contractor.

BACKGROUND ON THE HCIA R2 INITIATIVE AND EVALUATION

On September 1, 2014, the Center for Medicare & Medicaid Innovation (CMMI) awarded Round Two of the Health Care Innovation Awards (HCIA R2) as cooperative agreements to 39 organizations. These cooperative agreements extend from September 1, 2014, to August 31,

2017. CMMI selected organizations whose goals are to (1) reduce Medicare, Medicaid, and Children’s Health Insurance Plan (CHIP) costs in outpatient or post-acute settings; (2) improve care for patients with special needs; (3) test new financial and clinical models for specific provider types; and (4) improve the health of specific populations by enhancing patient engagement and improving disease prevention, wellness, and comprehensive care. The 39 awardees target a diverse set of populations, operate across a wide range of organizations, and have developed a large variety of delivery systems and payment models.

CMMI selected Mathematica Policy Research and its partners to conduct an independent evaluation of the HCIA R2 programs. The goals of this evaluation are to assess the extent to which the programs are transforming the delivery and financing of health care services and improving the coordination, efficiency, and quality of care. At the end of each evaluation year, Mathematica will submit an annual report. The purpose of the first annual report is to:

1. Describe the operational characteristics of each of the HCIA R2 programs
2. Summarize findings about each awardee’s early implementation experiences
3. Assess the facilitators of and barriers to each awardee’s success in implementing its program during the first year of the award

One of the 39 HCIA R2 programs is the Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly (PRIDE) program, which is being implemented by Yale University. In this document (referred to as a “narrative”), we examine this program’s first year of implementation. It is one of 39 such narratives included in Volume II to the first annual report on HCIA R2.

EARLY IMPLEMENTATION EXPERIENCE

The first year of the HCIA R2 evaluation has focused on developing a baseline understanding of Yale University’s PRIDE program, including initial implementation experiences, initial challenges to and successes with enrollment, and the engagement and participation of stakeholders such as partners and collaborating organizations. This narrative presents findings from our analysis of qualitative data gathered through a review of the awardee’s application, initial discussions with the awardee, key informant interviews conducted during a recent site visit to Yale University, and a review of Yale University’s reports submitted to the implementation and monitoring contractor through August 31, 2015.

In addition to providing a general description of Yale University’s program, this narrative addresses four questions:

1. How effectively has the program been implemented?
 2. What are the facilitators of and challenges to implementing the program, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?
-

3. How does the awardee make decisions about program-related changes?
4. To what extent has the awardee begun to plan for or implement payment reforms?

We also provide a brief summary of Yale University's impact evaluability assessment and identify next steps in our evaluation.

A. Introduction

PRIDE grew out of the project leaders' previous experience in providing emergency medical care and their observations that individuals who call 911 for assistance after a fall tend to be physically weak and at risk for repeated falls and other medical emergencies. These patients frequently do not have a primary care physician (PCP) to address their underlying health issues or may not notify their PCP about the fall experience.

To address these issues, Yale University's PRIDE program uses a care management approach to improve the health of individuals in Connecticut's greater New Haven area who have fallen or who are at risk of falling. The PRIDE program's theory of change or theory of action (TOC/TOA) is that in-home interventions, preventive care, and increased linkages to primary care will reduce falls that contribute to preventable emergency department (ED) visits, hospitalizations, and 911 calls. Ultimately, successful reduction in fall rates should reduce mortality and morbidity in the target population.

The program recruits potential participants through a combination of strategies including (1) contacting individuals who called for 911 assistance after falling, (2) speaking with ED patients who seek treatment for a fall or who feel at risk for falling, and (3) holding PRIDE education sessions about fall risk prevention at senior centers and town hall events. The PRIDE program does not restrict enrollment to elderly individuals, but anticipates that a majority of enrollees will be over age 65. After enrollment, a PRIDE paramedic completes an in-home assessment, which considers multiple aspects of participants' health status and residential safety. The assessment results enable the paramedic to address issues that contribute to increased fall risk in the home—for example, suggesting removal of a throw rug or other obstacle. At the conclusion of the assessment visit, the PRIDE paramedic schedules an appointment with the participant's PCP. If the participant does not have a PCP, the paramedic connects him or her with Yale University's outpatient primary care clinic. Also, if the participant requires transportation assistance, the paramedic arranges for transportation to and from the initial PCP visit.

The paramedic also schedules a home visit by a nurse from a partnering visiting nurse agency (VNA) or, if the program participant already receives VNA care, contacts the VNA nurse who treats the participant. The PRIDE VNA nurse completes an in-home patient health assessment to determine the need for ongoing nursing care, physical therapy, occupational therapy, or durable medical equipment. Key features of the VNA assessment include (1) a medication reconciliation (for example, to identify prescriptions that may impact blood pressure or possible contraindications); (2) an adjustment to existing durable medical equipment (for example, adjusting the height of a walker); and (3) contact information to access social service

resources (for example, Meals on Wheels, a durable medical equipment installation company, or a local adult day care organization). The VNA nurse may also communicate the assessment findings to the participant's PCP. Key characteristics of Yale University's PRIDE program are described in Table 1.

Table 1. Yale University: PRIDE characteristics at a glance

Program characteristic	Description
Purpose	Through in-home interventions and increased linkages to PCPs, Yale University's PRIDE program aims to reduce falls and other medical emergencies that contribute to preventable ED visits, hospitalizations, and 911 calls.
Components	Care management (primary)
Target population	Individuals in the greater New Haven area of Connecticut who have fallen or who are at risk of falling. The PRIDE program does not restrict enrollment to elderly individuals, but anticipates that a majority of enrollees will be over age 65.
Theory of change/theory of action	PRIDE seeks to reduce falls and other medical emergencies through in-home paramedic and VNA fall risk assessments, preventive care, and increased access to primary care.
Payment model	Per capita care management payment Prospective population-based payment from Medicare Part B to reimburse paramedics, VNAs, and transportation providers
Award amount	\$7,159,976
Launch date ^a	March 25, 2015
Setting	In participants' homes
Market area	Urban and suburban
Market location	Greater New Haven, Connecticut
Core outcomes	Successful reduction in lift assist calls and other medical emergencies should reduce mortality and morbidity, ED visits, and total expenditures in the target population.

^aAfter a planning period, the awardee's program became operational as of this date.

B. Methods

The evaluation team developed this narrative based on qualitative analyses of (1) the awardee's application, (2) self-reports submitted by Yale University to the implementation and monitoring contractor that cover the first year of the cooperative agreement (September 2014 to August 2015), and (3) data gathered during initial telephone discussions with the awardee and during our site visit to Yale University's PRIDE program on November 2 and November 3, 2015. For our document review, we used a standardized tool to abstract key data from the awardee's application, the first four quarters of program documents, operational plans, self-measurement and monitoring plans, program narratives, progress reports, and other supplemental materials.

During our site visit, we visited PRIDE headquarters to interview awardee leaders and operations staff. We then met with the following frontline staff who represent different geographic regions and roles: (1) an ED-based researcher; (2) paramedics from Branford and Madison, Connecticut; (3) a representative of American Medical Response (AMR), a paramedic and medical transportation service operating in New Haven; (4) representatives from two VNAs;

and (5) staff from the Yale Center for Clinical Investigation (YCCI) call center. We also attended a quarterly meeting of all program partners and key staff.

A two-person team conducted the interviews using semi-structured protocols. After obtaining consent from interviewees, we recorded audio from the interviews and later transcribed the recordings. A team member received training; achieved inter-rater reliability on coding; and applied codes to identify program components, research questions, and concepts that described the implementation experiences. The team then extracted text pertaining to the research questions. Using these extracts and information from the document review, the evaluation team synthesized the material into this report on Yale University's implementation experience.

C. Findings

1. How effectively has the program been implemented?

In response to low enrollment, Yale University revised the PRIDE participant criteria and recruitment methods. Initially, Yale University designed the PRIDE program to target individuals requiring "lift assists," meaning individuals who had called 911 for help getting up after a fall but who needed no further medical intervention. Recognizing that the enrollment rate was below projections, Yale University expanded the participant criteria to include individuals who were concerned about but who may not have experienced a fall. In addition, the program refined the approach to recruitment to include the following three methods:

1. **After a 911 call.** During a 911-initiated lift assist, the responding emergency medical service (EMS) provider informs the patient about the existence of the PRIDE program and provides an informational brochure. A PRIDE paramedic then visits the patient at home shortly after the lift assist to complete enrollment.
2. **While in the ED.** Yale University has hired PRIDE researchers to speak with potential participants who seek medical care in the ED after a fall but who are not hospitalized for an acute illness or injury. The researchers describe the PRIDE program to ED patients and their caregivers, either to complete enrollment or to collect contact information so that PRIDE paramedics can visit them at home to complete the enrollment.
3. **From self-referrals.** Individuals or their caregivers enroll after learning about PRIDE from a presentation at a community event (for example, a town hall or senior center meeting); through social media (for example, the PRIDE website or Google+ site); or via the PRIDE brochure. Individuals can enroll during the community event or can contact the YCCI call center to request a PRIDE paramedic in-home visit to enroll.

The current recruitment method no longer builds on 911 computer-aided dispatch (CAD) data but seeks instead to leverage PRIDE partners' existing information technology (IT) systems and the availability of on-call PRIDE paramedics. Yale University planned to enroll individuals by identifying 911 lift assist calls from CAD data. However, Yale University discontinued this strategy after discovering that CAD data would not be available until weeks after the optimal window for a PRIDE intervention. Instead, Yale University encouraged

paramedics on a lift assist call to introduce the PRIDE program and collect potential participants' contact information so that the YCCI call center could follow up to schedule a PRIDE paramedic visit to complete enrollment. More recently, Yale University has developed a new strategy with AMR, a partner providing both emergency transportation and paramedic services in New Haven. Currently, AMR paramedics on a lift assist flag the potential PRIDE participant in AMR's IT system. Seeing the flag, AMR operations staff notify an on-call PRIDE paramedic, who then visits the patient within one day of the initial 911 call to complete enrollment. Although Yale University only recently implemented this "real-time" strategy in New Haven, early indications of success spurred Yale University to consider expanding the strategy more broadly.

Yale University refined the PRIDE approach to patient interactions to incorporate the university's marketing and communication resources.

"There is a comfort level . . . a trust level. . . . You have got to think as a family member, 'I don't want the outside world to feel like we aren't taking care of our family member.' And then there were a few other topics. . . . That this PRIDE program is going to cost. And so why would they put their mom into another program that they have to pay for. . . . It's those small, little misconceptions. Some things we can smooth out over the phone."

— YCCI staff

Based on unsuccessful early interactions with potential participants, PRIDE leaders recognized that misunderstandings about the program posed a barrier to implementation. Older adults expressed concern that enrolling would require payment, they would lose their independence, and PRIDE may be a scam. Caregivers, too, appeared to be concerned that their loved ones would be forced to move to a nursing home, both impacting the families' financial situations and implying that the at-home care was inadequate. Yale University refined the program's

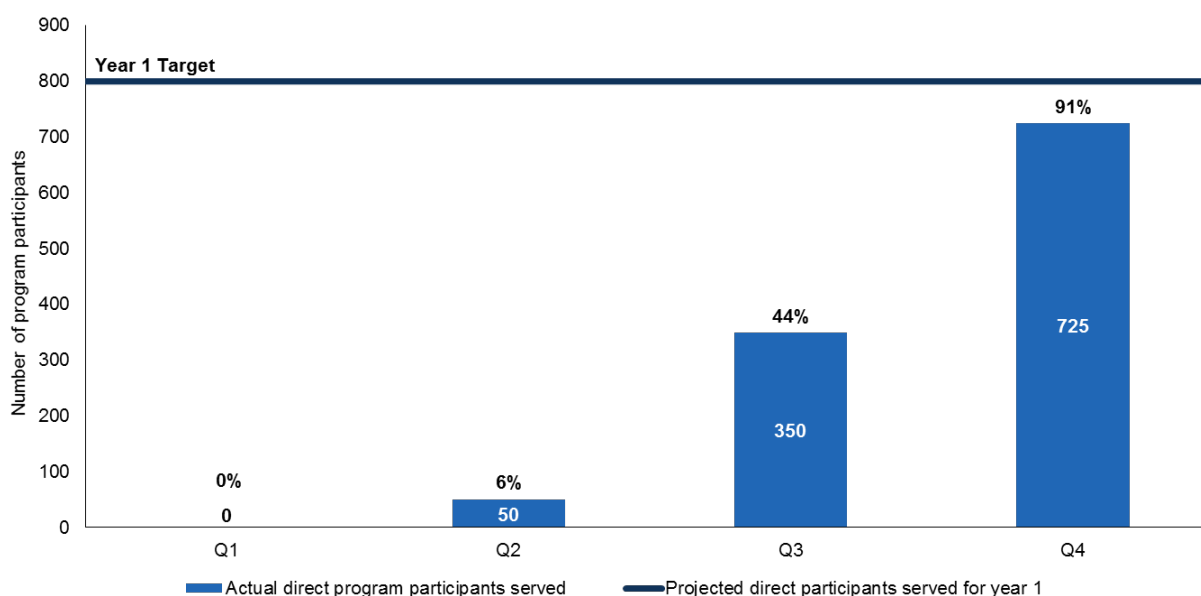
communication strategy through a partnership with YCCI, an organization that supports university research projects with community outreach. With YCCI's assistance, PRIDE leaders designed a brochure to assure potential participants and their caregivers about the legitimacy and benefits of the PRIDE program. YCCI also takes the lead on phone-based interactions with participants and potential participants. The organization's call center receives calls from individuals seeking to enroll in or asking questions about the program. In addition, staff in the call centers place calls to participants who enrolled through the ED or senior center to schedule PRIDE paramedic assessments. PRIDE paramedics no longer attempt to schedule their own in-person home visits, which reduced both the burden on PRIDE paramedics and the number of potential participants screening PRIDE calls.

Yale University's hiring processes and institutional review board (IRB) requirements delayed PRIDE operations. Soon after initiating PRIDE, program leaders realized that Yale University did not consider the PRIDE paramedics' previous training and experience to be sufficient for a researcher role. The university required paramedics to be certified as Yale University researchers by completing both a rigorous background check and a series of training sessions. Paramedics noted that this unexpected change to the hiring process dissuaded some EMS staff who initially expressed interest in joining the program, and delayed enrollment somewhat. Yale University's IRB approval process created additional delays, more for significant revisions to the program (for example, adding a new recruitment method) than for adjusting an existing strategy (for example, translating the brochure from English to Spanish).

Over time, PRIDE leaders have come to better understand Yale University’s hiring and IRB processes and have identified strategies to expedite the required steps. Nevertheless, 22 PRIDE paramedics were hired by early November, falling short of the awardee’s target of 30 or 40 PRIDE paramedics.

Yale University has reassessed its enrollment targets given the changes in the enrollment process. As of the fourth quarter, Yale University expected to enroll 1,600 individuals each year, or 4,800 individuals over the three-year program. From the start of the program to the time of our site visit in early November, the university enrolled approximately 140 individuals, up from 42 at the end of the first year (Figure 1). Given the changes to its enrollment processes (described earlier), program leaders expect to eventually enroll 300 participants each month.

Figure 1. Projected versus actual cumulative direct participants served through year 1



Source: Data file from the implementation and monitoring contractor; first, second, third, and fourth program quarters: September 2014–August 2015.

Notes: Projected direct participants served reflects the cumulative and unique number of individuals the awardee estimated to ever be served in the program through August 2015. Direct program participants refers to the total number of unique participants for whom the awardee has provided assistance from program launch through the fourth program quarter. Yale University does not have indirect program participants.

2. What are the facilitators of and challenges to implementing the program’s care management component, and what strategies have been developed to address those challenges, including the effectiveness of those strategies?

PRIDE co-directors built on pre-existing relationships with the local emergency medicine and research communities to establish partnerships for the program. Program staff and leaders emphasized the important role that PRIDE’s strong partnerships play in

program operations and improvements. According to quarterly reports submitted by the awardee, PRIDE established relationships with four VNAs, two transportation providers, YCCI, the Agency on Aging (AoA), and eight fire departments in the New Haven region. Program leaders maintain strong relationships with their partners by engaging them in problem-solving discussions during the quarterly all-partner meetings and in ad hoc conversations. To address the challenge associated with hiring paramedics, program leaders turned to local EMS and fire chiefs to identify paramedics who would be good candidates for the program.

Paramedics experienced in the provision of emergent care expressed appreciation for the PRIDE program’s care management and assessment training.

“I thought [the training] was excellent . . . we learned a lot that we don’t typically know. They talked a lot about the different resources that are available and all the community partners and things that we can do for the patient while we’re in the home, things to look for and be aware of.”

— PRIDE paramedic

receive the following training opportunities: (1) understanding HIPAA and Yale University certification requirements; (2) conducting fall risk assessments; (3) shadowing individuals who have experience engaging participants about the risk of falling, such as a case manager in the ED or an experienced PRIDE paramedic; (4) entering assessment data into REDCap, a cloud-based software program loaded onto PRIDE iPads.

As a result of low program enrollment, some paramedics expressed frustration at the delay in using their training during home visits. In response, PRIDE offered “refresher” training opportunities and recently introduced quarterly paramedics meetings to increase their engagement in the program and to give them an opportunity to talk with each other in person.

PRIDE developed a REDCap-based data entry form for the VNA nurses, but they have indicated reluctance to use the tool as designed. After learning about the paramedics’ REDCap form, VNA nurses requested that PRIDE leaders develop a similarly interactive, electronic tool to assist with the VNA assessment. After some initial use of the VNA REDCap form, the VNA nurses provided feedback to continue to improve the form—for example, automatically displaying pertinent data from the paramedic assessment within the VNA form. Despite these refinements, multiple VNA nurses expressed discomfort with the new iPad technology. Instead, they use their laptops or hard copies of the form to collect the information during the assessment and later input the data into the iPad.

PRIDE central staff expressed concern that continued strong enrollment growth may exceed currently available frontline staff resources; they have prioritized the hiring and training of additional PRIDE paramedics, as a result. PRIDE experienced difficulty with recruiting paramedics in the past. A typical paramedic schedule may leave little time to “moonlight” for PRIDE, despite a paramedic’s initial interest in the program. Paramedics may also be dissuaded by Yale University’s background check, which has been known to extend three months, or by the confusion lingering from early phases of implementation when Yale University considered hiring PRIDE paramedics as casual employees who would be responsible for their own liability coverage.

To address paramedic recruitment challenges, PRIDE engaged fire department and EMS leaders in the greater New Haven area. In some towns, a fire department chief or an EMS operational deputy chief may identify and recruit paramedics who are good candidates for the PRIDE program. In addition, fire department and EMS leaders support participant identification by facilitating communications about the program with non-PRIDE paramedics. When responding to lift assist calls, these non-PRIDE paramedics introduce potential participants to PRIDE at the point at which they are most receptive to receiving fall-related assistance. The non-PRIDE paramedics may provide a PRIDE brochure and notify a PRIDE paramedic of the follow-up opportunity.

PRIDE frontline staff described different approaches to communicating with program participants' PCPs. A key aspect of the PRIDE program intervention is connecting the participants with their PCPs to fully address the health issues that contribute to increased fall risk on an ongoing basis.

However, paramedics and VNA nurses indicated some uncertainty about which PRIDE team member should contact a participant's PCP, the appropriate mode of communication, and the information that should be provided. One paramedic expressed consternation when asked about previous experience communicating with participants' PCPs, describing multiple attempts to contact a PCP that resulted in voice mails or messages left with receptionists. Another paramedic mentioned that some participants requested that PRIDE not contact their PCPs. VNA nurses expressed fewer concerns about the process of communicating with PCPs, in part because they are accustomed to contacting PCPs so that homebound Medicare patients may receive home health services. However, PRIDE's VNA nurses do not complete an assessment for all PRIDE participants. Some participants decline a VNA visit; other participants already receive VNA care for other conditions.

"I found a good majority of patients don't want you to [reach out to their PCPs] and I don't know the reason behind that. . . . They are like, 'Well, it's not necessary' or 'I have an upcoming appointment with him.'"

— PRIDE paramedic

3. How does the awardee make decisions about program-related changes?

PRIDE leaders emphasize the valuable role of frontline staff feedback to refine and improve program operations. Feedback may be in the form of ad hoc conversations between program management and a PRIDE paramedic after an in-home assessment or a facilitated discussion among all partners at the quarterly in-person, all-partners meeting. Through these interactions, PRIDE leaders learned from paramedics about the need for additional training opportunities and learned from VNA nurses about interest in tailoring the paramedic's REDCap form to support the VNA assessment.

The quarterly in-person, all-partners meetings enable a wide variety of organizations to join the discussion, perhaps becoming long-term PRIDE partners. For example, in the November 2015 meeting, representatives from the local AoA described social services that PRIDE paramedics and VNA nurses may suggest to program participants during their assessments. The AoA expressed interest in continued involvement in PRIDE by collaborating to deliver social services to program participants and better integrate health and social welfare services.

PRIDE paramedics and VNAs note that the quarterly in-person, all-partners meetings serve the additional purpose of breaking down perceived communication barriers between

"I think collaborating makes people . . . that are part of the group feel valued and accepting of everybody else's ideas, so we can put it together and build from there. It's not just silos, it's like . . . one common goal."

— VNA nurse

EMS and VNA staff. Facilitated discussions during these meetings enable PRIDE team members to better understand each other's perspectives and create an atmosphere of collaboration and shared learning. In addition, meeting attendees act as representatives for their organizations, funneling concerns and insights from

other paramedics and VNA nurses to the broader group and taking new information back to other frontline staff and EMS leaders.

Yale University uses monthly enrollment numbers to assess the degree to which the program meets the population's fall-related needs and whether there are additional opportunities for public education. Throughout the first year of implementation, Yale University closely monitored monthly program enrollment relative to initial projections. PRIDE leaders also mentioned that the Center for Medicare & Medicaid Innovation (CMMI) emphasized the importance of addressing the enrollment challenge. In response to this challenge, Yale University worked with frontline staff and partners to identify barriers to enrollment, such as older adults' fears that the PRIDE program would result in the loss of their independent living arrangement and that the initial enrollment criteria excluded frail individuals at risk of falling. In spring and summer 2015, PRIDE leaders refined both the participant criteria (for example, including individuals at risk for falling) and the recruitment methods (for example, presentations at senior centers). With adjustments to the enrollment processes, the number of new participants nearly doubled from 42 to 77 between August and September 2015, with expectations that the growth will continue. However, it would appear that the unintended effect of this level of program adaptability in the early months is confusion among PRIDE staff and partners about the current participant criteria and enrollment process.

Yale University has not yet completed calculations using the self-monitoring measures, in part due to delays in data access. Although assessment data collected through REDCap is available for analysis, some self-monitoring measures require health care utilization data. Only a small number of PRIDE staff with pre-existing faculty positions at Yale University have access to PRIDE participants' electronic medical records (EMR); most program staff must access these data through OnCore, an electronic interface that pulls EMR data specific to a particular research project. PRIDE leaders completed the design of the OnCore data pull and are currently waiting for Yale University's final approval. PRIDE leaders are also working with local Medicare Advantage plans for access to participants' health data for encounters outside the Yale–New Haven Hospital system. Access to participants' death records continues to be the main unresolved data access issue, requiring PRIDE researchers to rely instead on Internet searches to locate published obituaries, if available.

4. To what extent has the awardee begun to plan for or implement payment reforms?

Yale University's PRIDE payment model centers around the incentive for EMS agencies to reduce the number of nonreimbursable lift assist calls. The regional EMS medical director would be responsible for payment operations, including the receipt of prospective population-based payment through Medicare Part B to reimburse frontline providers. The population-based payment covers the following bundle of services: (1) an in-home paramedic assessment, (2) a two-hour initial VNA visit, and (3) round-trip transportation to a primary care appointment. Patients become eligible if they call 911 for a lift assist, had a fall-related ED visit and were discharged home, or contacted a call center for individuals who are at risk of falling.

Under this model, the EMS medical director would assume the financial risk for operating the program for all eligible individuals in the region, which highlights the importance of correct payment calculations. The awardee initially estimated a Medicare payment of \$2.13 per person per month, though the awardee expects to recalculate the figure after more participants enrolled in PRIDE. This revised calculation would account for the fact that the current program operates through a grant structure, requiring time and resources to obtain informed consent and complete the research analyses. Yale University is still working out details on how to identify eligible individuals and how to approach payers regarding this model.

During our site visit, PRIDE leaders spoke about state regulations governing the provision of in-home patient services by paramedics that pose a barrier to expansion of the PRIDE model outside a research environment. In Connecticut, community paramedicine programs must either acquire legislative authority to operate a demonstration project or use a different mechanism to pay paramedics, such as employing them as researchers. In some geographic regions, revision of paramedics' scope of practice regulations is necessary to operate a program similar to PRIDE.

D. Impact evaluability assessment

After reviewing information in program documents and conducting interviews with program staff, we concluded that a rigorous impact analysis is feasible for the ED-based recruitment method if current enrollment rates increase to reach ED-based enrollment targets for Medicare fee-for-service (FFS) beneficiaries. The best approach is a difference-in-differences design that compares treatment group participants recruited after visiting the Yale–New Haven Hospital ED for a fall-related event to matched patients who visited one of two hospital EDs in Hartford County, Connecticut, for a fall-related event. Because of health care provider discretion in referring participants to PRIDE, it is possible that there will be some bias that is not fully addressed by the comparison strategy. For example, PRIDE eligibility criteria require the participant to be discharged home without acute illness or injury, but defining acute illness or injury leaves room for interpretation. Because of the current sample size of the ED-based recruitment method, the ability to detect small effects is not anticipated to be very strong. Although we are exploring accessibility to Medicare Advantage and Medicaid data, the current strategy focuses on Medicare FFS beneficiaries.

E. Next steps

We look forward to continuing to work with Yale University for the remaining portion of the award period. Specifically, we will be working on both the implementation and impact evaluations, as described below.

1. Implementation evaluation

During the next year, we will continue to review quarterly reports submitted by the awardee to the implementation and monitoring contractor. In addition, we will conduct a virtual site visit consisting of an intensive series of telephone calls with awardee leaders and program staff in the summer of 2016. We will use these calls to follow up on key issues identified during the site visit in the fall of 2015. Specifically, we will inquire about any recent changes to the program, obtain feedback on the enrollment process, and update our understanding of the challenges to and facilitators of implementing each program component. We will document our findings on these topics in future reports.

2. Impact evaluation

The next steps in the impact analysis include identifying all Medicare participants recruited through a fall-related ED visit. Upon identifying treatment group participants in the Medicare FFS claims data, we will begin to produce initial baseline means on treatment group patient characteristics. Once PRIDE has enrolled at least 300 Medicare FFS beneficiaries from the ED-based recruitment method, we will identify a pool of potential comparison group patients, compare baseline characteristics across the treatment group and comparison group, and determine how well the groups match one another. We anticipate conducting a propensity score analysis to better align baseline characteristics across the treatment and comparison groups. After constructing a matched comparison group, we will produce initial impact estimates for the relevant quarters of program operations, depending upon data availability, after creating our outcome and explanatory variables.

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