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# **Evaluation of the Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration**

## **Second Annual Report**

Prepared for

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# **Evaluation of the Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration Second Annual Report**

by

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## LIST OF ACRONYMS

### EVALUATION OF THE MULTI-PAYER ADVANCED PRIMARY CARE PRACTICE (MAPCP) DEMONSTRATION

ABD	aged, blind, or disabled
ACO	accountable care organization
ACSC	ambulatory care sensitive conditions
ADK Demonstration	Adirondack Medical Home Demonstration
ADT	Admission-Discharge-Transfer
AHEC	Area Health Education Centers
AHI	Adirondack Health Institute, Inc.
AHRQ	Agency for Healthcare Research and Quality
AMI	acute myocardial infarction
APCD	all-payers claims database
ARC	Actuarial Research Corporation
ARRA	American Recovery and Reinvestment Act
BCBS	Blue Cross Blue Shield
BCBSM	Blue Cross Blue Shield of Michigan
BCBSNC	Blue Cross Blue Shield of North Carolina
BCBSRI	Blue Cross Blue Shield of Rhode Island
BH	behavioral health
BHHO	behavioral health home organizations
BMI	body mass index
BQPP	Blue Quality Physician Program
CAH	critical access hospital
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CCA	clinical care associate
CCNC	Community Care of North Carolina
CCS	Clinical Classification Software
CCT	community care team
CDC	comprehensive adult diabetes care
CEDARR	Comprehensive Evaluation, Diagnosis, Assessment, Referral, and Re-evaluation
CG	comparison group
CHF	congestive heart failure
CHT	community health team
CME	continuing medical education
CMIS	Case Management Information System

CMMI	Center for Medicare & Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
COC	Continuity of Care Index
CO-OP	Consumer Operated and Oriented Plan
COPD	chronic obstructive pulmonary disease
CPT	Current Procedural Terminology
CRF	chronic renal failure
CSI	Chronic Care Sustainability Initiative
CSS	Council of Subspecialty Societies
CVD	cerebrovascular disease
D-in-D	difference-in-differences
DME	durable medical equipment
DOH	Department of Health
DPW	Department of Public Welfare
E&M	evaluation and management
EDB	Enrollment Data Base
EHR	electronic health record
EOHSS	Executive Office of Health and Human Services
EquIP	Expansion and Quality Improvement Program
ER	emergency room
ERISA	Employee Retirement Income Security Act of 1974
ESRD	end-stage renal disease
FFS	fee-for-service
FQHC	federally qualified health centers
FTE	full-time equivalent
FY	fiscal year
GOHCR	Governor's Office for Health Care Reform
HCC	Hierarchical Condition Category
HCDS	Health Care Delivery Systems
HCH	Health Care Homes
HCPCS	Healthcare Common Procedure Coding System
HDL	high-density lipoprotein
Health IT	health information technology
HHA	home health agency
HIE	health information exchange
HIPAA	Health Insurance Privacy and Accountability Act
HITECH	Health Information Technology for Economic and Clinical Health
HIXNY	Health Information Xchange New York

HMO	health maintenance organization
HRSA	Health Resources and Services Administration
HSA	health service area
ICD-9-CM	International Classification of Diseases, Ninth Revision, Clinical Modification
IMPaCT	Infrastructure for Maintaining Primary Care Transformation
IPPS	inpatient prospective payment system
IT	information technology
IVD	ischemic vascular disease
LCSW	licensed clinical social worker
LDL-C	low-density lipoprotein cholesterol
LPN	licensed practical nurse
LTCH	long-term care hospital
MAeHC	Massachusetts e-Health Collaborative
MAPCP	Multi-Payer Advanced Primary Care Practice
MAT	medication assisted therapy
MCO	managed care organization
MDM	Master Data Management
MiHIN	Michigan Health Information Network
MiPCT	Michigan Primary Care Transformation Project
MMIS	Medicaid management information system
MPHI	Michigan Public Health Institute
MU	meaningful use
NCDHHS/ORHCC	North Carolina Department of Health and Human Service's Office of Rural Health and Community Care
NCH	National Claims History
NCQA	National Committee for Quality Assurance
NEPA	northeast Pennsylvania
NPI	National Provider Identifier
NPES	National Plan and Provider Enumeration Systems
NYS DOH	New York State Department of Health
OHIC	Rhode Island Office of the Health Insurance Commissioner
OPD	outpatient department
OR	operating room
P4P	pay-for-performance
PAFP	Pennsylvania Academy of Family Physicians
PBPM	per beneficiary per month
PBPQ	per beneficiary per quarter

PCMH	patient-centered medical home
PDSA	Plan-Do-Study-Act
PGIP	Physician Group Incentive Program
PGP	Physician Group Practice
PMPM	per member per month
PO	provider organization
PPC®-PCMH™	Physician Practice Connection Patient-Centered Medical Home
PQI	Prevention Quality Indicator
PS	propensity score
PVD	peripheral vascular disease
QDC	Quality Data Center
QFE	quarterly fixed effects
RHC	rural health clinic
RHIO	Regional Health Information Organization
RIQI	Rhode Island Quality Institute
RN	registered nurse
RoI	return on investment
RUI	Resource Use Index
SASH	Support and Services at Home
SEPA	southeast Pennsylvania
SIM	State Innovation Model
SNF	skilled nursing facility
SPA	State Plan Amendments
SQRMS	Statewide Quality Reporting and Measurement System
STDF	standardized difference
TCOC	Total Cost of Care
TIN	tax identification number
UB	uniform billing
VCCI	Vermont Chronic Care Initiative
VHCURES	Vermont Healthcare Claims Uniform Reporting and Evaluation System
VHIE	Vermont's Health Information Exchange
VITL	Vermont Information Technology Leaders

# **CHAPTER 1**

## **MULTI-PAYER ADVANCED PRIMARY CARE PRACTICE (MAPCP) DEMONSTRATION EVALUATION SECOND ANNUAL REPORT: INTRODUCTION, ORGANIZATION, AND DATA AND METHODS**

### **1.1 Overview of the MAPCP Demonstration and Evaluation**

#### **1.1.1 Overview of the MAPCP Demonstration**

For the Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration, the Centers for Medicare & Medicaid Services (CMS) joined state-sponsored initiatives to promote the principles characterizing patient-centered medical home (PCMH) practices. After a competitive solicitation, eight states were selected for the MAPCP Demonstration: Maine, Michigan, Minnesota, New York, North Carolina, Pennsylvania, Rhode Island, and Vermont. Although the demonstration in all eight states was to start on July 1, 2011, only New York, Rhode Island, and Vermont became operational on that date. Minnesota and North Carolina became operational on October 1, 2011, and Maine, Michigan, and Pennsylvania became operational on January 1, 2012.

Each state PCMH initiative participating in the MAPCP Demonstration was required to be implemented by a state agency as part of a state-sponsored reform initiative. Medicare joined state reform initiatives already in progress. Medicaid and major private health plan(s) are participating in all eight initiatives. Several programs, such as Rhode Island, also have substantial participation among self-insured groups. Many state programs are exceeding the MAPCP Demonstration requirement for at least 50 percent private-payer participation.

In the request for applications, states were instructed that the average Medicare per member per month (PMPM) payment should not exceed \$10, and that the payment methods should be applied consistently by all participating payers—but not necessarily at the same dollar level—unless a compelling case for an alternative was made. Each state has its own payment levels and established its own methods. For example, Vermont pays practices differentially based on the National Committee for Quality Assurance (NCQA) PCMH Recognition level. In contrast, Minnesota pays practices differentially based on the number of patient comorbidities.

State initiatives also were required to promote the principles of advanced primary care practice (APCP), but each state had broad flexibility to adopt its own definition of what constitutes such practice. All of the MAPCP Demonstration states (except for Michigan and Minnesota) elected to define advanced primary care (APC) in alignment with the NCQA PCMH Recognition standards. Further, states added expectations for practices to reflect local priorities. For the remainder of this report, we use the term PCMH to refer to all practices participating in state MAPCP Demonstration initiatives, with the exception of Minnesota, where we use the term Health Care Homes (HCH), consistent with its naming convention.

Each state initiative was required to make provisions for the integration of community-based resources to support APCPs. Several states (Maine, New York, North Carolina, Michigan, Rhode Island, and Vermont) are funding community health teams (CHTs), community-based practice support networks, or physician organizations to perform this function.

Further, each state initiative was required to provide for the ongoing measurement of quality and performance and evaluation of the initiative's impact. Several states formed partnerships with state universities to conduct these evaluations.

To provide the "prospective assurance" of budget neutrality, states were required to identify and present persuasive evidence supporting their projections that CMS participation in the state initiative would result in savings to Medicare at least equal to the amount of CMS payments to participating practices. This provided CMS with measurable outcomes for purposes of evaluation.

### **1.1.2 Overview of the MAPCP Demonstration Evaluation**

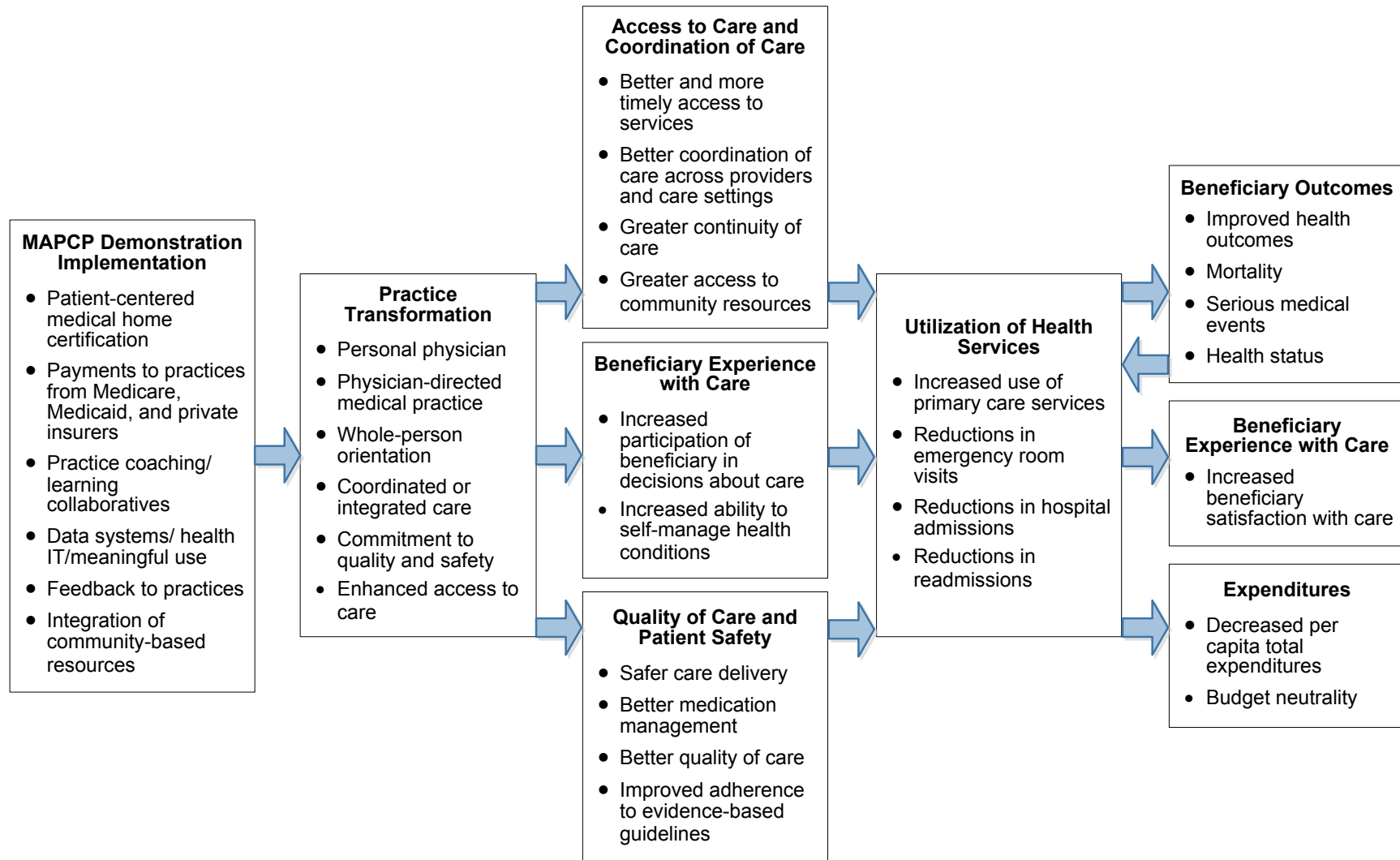
In 2011, CMS selected RTI International and its subcontractors, the Urban Institute and the National Academy for State Health Policy, to evaluate the MAPCP Demonstration. The goal of the evaluation is to identify features of the state initiatives or the participating PCMH practices that are positively associated with improved outcomes. The evaluation uses a mix of qualitative and quantitative methods to capture each state's unique features and to develop an in-depth understanding of the transformative processes occurring within and across the states' health care systems and participating PCMH practices, thereby allowing us to link structural and process changes directly to outcomes.

*Figure 1-1* shows the conceptual framework for the MAPCP Demonstration evaluation, organized into six main domains: State Initiative Implementation, Practice Transformation, Access to Care and Coordination of Care, Beneficiary Experience with Care, Quality of Care and Patient Safety, and Effectiveness (Utilization of Health Services and Expenditures). In our evaluation we also consider Special Populations. Although each state initiative has unique aspects, the framework reflects common features of the interventions and broad areas of outcomes within our evaluation design. The framework abstracts from other factors also influencing evaluation outcomes, such as individual beneficiary characteristics and the broader health care, social, political, economic, and physical environment in which the PCMH initiatives operate.

As shown in *Figure 1-1*, the state-sponsored initiatives are undertaking a range of strategies to promote the transformation of participating practices to PCMH practices. In addition to payments from the major payers to participating practices, other strategies include practice coaching and learning collaboratives; development of data systems and health information technology infrastructure to provide decision support tools, facilitate information exchange among providers, and achieve meaningful use objectives; feedback to practices on quality, utilization, and cost outcomes; and integration of community-based resources.

These strategies are intended to support transformation of participating practices to embody the principles of the PCMH model (American Academy of Family Physicians et al., 2007). The PCMH model expands on the chronic care model developed by Wagner (1998), which identified six elements of a delivery system that lead to improved care: the community, the health system, self-management support, delivery system design, decision support, and clinical information systems (Glasgow, Orleans, & Wagner, 2001; Wagner, 2002; Wagner et al., 2001). Beneficiaries in these transformed practices are expected to have better access to care and better-coordinated care; to receive safer, higher quality care; and to be more engaged in decision making about their care and management of their health conditions.

**Figure 1-1**  
**Conceptual framework for the MAPCP Demonstration evaluation**



As in the chronic care model, patients and providers in PCMHs interact more productively, which can lead to improved functional and clinical outcomes. As a result, patients are expected to have more efficient patterns of health service utilization, thereby promoting the triple aim of improving beneficiary experience with care, improving health outcomes, and reducing per capita total expenditures (Berwick, Nolan, & Whittington, 2008). Improved health outcomes also can result in reduced service utilization.

To test whether the MAPCP Demonstration is associated with success, individual-, practice-, and system-level primary and secondary data are being collected and analyzed to answer research questions organized in three broad evaluation domains: State Initiative Implementation, Practice Transformation, and Outcomes. Outcomes include clinical quality of care and patient safety, access to and coordination of care, beneficiary experience with care, patterns of utilization, Medicare expenditures, budget neutrality, and special populations. The evaluation team worked collaboratively with CMS, other CMS demonstration evaluation contractors (e.g., RAND), and evaluators of non-CMS PCMH initiatives, such as the Multi-State PCMH Collaborative and the PCMH Evaluators Collaborative, to identify a set of core outcome measures and specifications to use in this report. The evaluation team also identified additional outcome measures to evaluate across all eight states for both Medicare and Medicaid beneficiaries. Lastly, the evaluation team reviewed states' MAPCP Demonstration applications to determine the types of utilization and expenditure reductions each state expected and developed analytic variables for these services to allow for direct examination of budget neutrality annually. *Appendix A* contains a table of the evaluation research questions by each evaluation domain and summarizes the methods, outcome measures, and data sources used to answer those questions.

The evaluation uses a mixed-method design, with both quantitative and qualitative methods and data. Mixed-methods research is well suited for accomplishing the goals of this evaluation because different methods yield different insights. Quantitative methods are well suited to outcome evaluation and answering a variety of questions about whether and by how much costs were reduced and quality and safety improvements achieved for various types of beneficiaries and practices. The goal of the quantitative analyses is to estimate the association between the MAPCP Demonstration and changes in patient utilization, costs, and other outcomes. In contrast, qualitative methods are well suited for process evaluation and providing data on the historical and current context of the state initiatives; their key features and how they evolve over time; barriers and facilitators to implementation; perceived benefits and costs or pros and cons for practices and patients; and lessons learned. Qualitative analyses for the evaluation are intended to complement the quantitative methods.

The evaluation team is conducting multiple rounds of primary and secondary data collection. Findings from the first year of the MAPCP Demonstration were reported to CMS in the First Annual Report (CMS, 2015). Findings from the second year of the demonstration are included herein. The Third Annual Report will include findings from the third year of the demonstration. A Final Report will include results from our cross-state analyses. With multiple rounds of quantitative and qualitative analyses, we are able to report both qualitative and quantitative findings along a continuum of state implementation and practice transformation maturation. Our principal focus is conducting eight separate within-state evaluations. Qualitative analyses of the MAPCP Demonstration are conducted within each state three times and reported in the First, Second, and Third Annual Reports, and will be reported across the eight states in the

last year of the evaluation. Medicare quantitative outcomes analyses for each state were conducted twice, for the First and Second Annual Reports, and will also be conducted for the Final Report. Medicaid quantitative outcomes analyses for each state will be conducted for the Final Report. RTI continues to work with each state to obtain Medicaid claims data directly from the states, their contractors, or managed care organizations providing health care insurance for Medicaid beneficiaries. Finally, a smaller set of three quantitative analyses related to budget neutrality, utilization, and expenditures will be conducted across the eight states, allowing us to examine features of the state initiatives or the participating PCMH practices associated with positive outcomes.

This Second Annual Report contains findings from the second round of site visits, which occurred in October and November 2013, to each of the eight MAPCP Demonstration states and quantitative data analyses for the second year of each state demonstration. The quantitative analyses are restricted to Medicare fee-for-service (FFS) beneficiaries.

To allow sufficient time for Medicare claims to be submitted and processed, we restrict our quantitative analyses to Medicare beneficiaries assigned to practices participating in the Vermont, New York, and Rhode Island state initiatives from July 1, 2011, through June 30, 2013; in the Minnesota and North Carolina state initiatives from October 1, 2011, through September 30, 2013; and in the Pennsylvania, Maine, and Michigan initiatives from January 1, 2012, through December 31, 2013. Thus, we evaluated the second year of the MAPCP Demonstration for all eight states.

### **1.1.3 Organization of the Second Annual Report**

The Second Annual Report contains the qualitative and quantitative findings from the second year of evaluation. The remainder of this chapter (**Section 1.2**) provides an overview of our MAPCP Demonstration evaluation design and the qualitative and quantitative data and methods used in this report.

**Chapter 2** provides a summary of qualitative and quantitative findings across the eight demonstration states and across the key evaluation domains of State Initiative Implementation, Practice Transformation, and Outcomes (clinical quality of care, patient safety and health outcomes, access to care and coordination of care, beneficiary experience with care, effectiveness [utilization, expenditures, and budget neutrality], and special populations). The chapter starts with a snapshot of key features of the eight initiatives (**Section 2.1**). **Section 2.2** summarizes key themes and early implementation findings from the state site visits and concludes with lessons learned. **Section 2.3** provides usage data and feedback from users of the RTI Web portal. **Section 2.4** summarizes key qualitative findings related to practice transformation activities during the second year of the MAPCP Demonstration. **Section 2.5** provides a cross-state summary for five quantitative outcomes. **Section 2.6** summarizes the Medicare budget neutrality results in Year Two of the demonstration. **Section 2.7** provides an overall summary of implications of the findings for states, CMS, and evaluators.

**Chapters 3 through 10** provide detailed qualitative and quantitative findings for all eight MAPCP Demonstration states. Each chapter has eight sections: state initiative implementation; practice transformation; clinical quality of care, patient safety, and health outcomes; access to

care and coordination of care; beneficiary experience with care; effectiveness (utilization, expenditures, and budget neutrality); and special populations. Each chapter concludes with a discussion of Year Two findings and next steps for the state initiatives.

**Chapter 11** incorporates findings from both the qualitative and quantitative analyses to highlight overarching themes and similarities across the eight state initiatives. We summarize common implementation activities that were new in Year Two and provide a discussion of expected outcomes. We identify common challenges that surfaced in Year Two or remained from Year One and lessons learned.

## **1.2 Overview of Evaluation Design and Qualitative and Quantitative Data and Methods**

In this section, we provide an overview of our quantitative and qualitative methods. We begin by describing the MAPCP Demonstration eligibility criteria to be met by Medicare FFS beneficiaries to participate in each initiative and describe the method of attribution of beneficiaries to participating PCMHs and comparison practices. Next, we provide a description of the analytic methods used in our modeling of outcomes to adjust for partial eligibility for the MAPCP Demonstration and to align beneficiary, practice, and geographic characteristics of the comparison groups to the intervention groups. We then provide an overview of qualitative data and methods. We conclude this section with an overview of quantitative data and methods used in our evaluation, including our approach to estimating Medicare budget neutrality within the MAPCP Demonstration.

### **1.2.1 Identification of Intervention Beneficiaries**

Attribution to practices participating in each state's multi-payer PCMH initiative occurs quarterly using attribution methods independently developed by each MAPCP Demonstration state and implemented by Actuarial Research Corporation (ARC) for all states except Minnesota (see **Appendix B** for details on attribution for each state). Unlike participating practices in the other seven demonstration states, Minnesota practices are expected to self-attribute beneficiaries to practices and submit monthly claims for MAPCP Demonstration payments to Medicare on behalf of all eligible patients in a practice. However, the majority of certified health care home practices otherwise eligible for demonstration payments have not submitted monthly MAPCP Demonstration claims to Medicare. Because of the exceptionally low observed rate of practice billing in Minnesota's MAPCP Demonstration, we used an attribution developed by ARC for evaluating Minnesota.

To be eligible for participation in the MAPCP Demonstration, Medicare beneficiaries must meet the following eligibility criteria each quarter:

- Be alive.
- Have Medicare Parts A and B.
- Be covered under traditional Medicare FFS.
- Have Medicare as the primary payer for health care expenses.

- Reside in the state-specified geographic area for its initiative.
- Be attributed to a MAPCP Demonstration participating practice.

All Medicare beneficiaries meeting these six criteria are eligible for inclusion in the evaluation sample. They also must be attributed to a participating PCMH for at least 3 months over the course of the relevant demonstration evaluation period (i.e., 12 months, 24 months, 36 months). We removed beneficiaries with fewer than 3 months of eligibility during the demonstration period, assuming that practices and other entities, such as the community health teams in some states, had limited opportunity to engage and influence outcomes during the demonstration period for beneficiaries with limited time attributed to a participating PCMH. In removing beneficiaries with fewer than 3 months of eligibility, we minimize the potential bias to the null of our impact analysis findings.

The MAPCP Demonstration allows for a rolling entrance of practices into and out of the demonstration. In addition, Medicare beneficiaries are allowed to enter the evaluation on a rolling basis, but they could lose eligibility during the demonstration if the practice to which they were attributed drops out of the state initiative. Beneficiaries also lose eligibility when they no longer meet the criteria listed above. Once a beneficiary is eligible for the MAPCP Demonstration for at least 3 months, however, the beneficiary will always be included in the evaluation. If beneficiaries lose Medicare eligibility at any time after they are attributed to a MAPCP Demonstration practice, their outcomes are no longer observed during the periods of lost eligibility. Thus, we consider the MAPCP Demonstration an intent-to-treat study design.

For the quantitative analyses, claims data are included if the service was provided on a day when the beneficiary was eligible. Claims were excluded during any periods of ineligibility. We constructed a variable reflecting the length of time the beneficiary is eligible each quarter to use as an analytic weight in all claims-based analyses. The eligibility fraction is defined for each quarter as the total number of eligible days during the quarter, divided by the total number of days alive in the quarter.<sup>1</sup>

### **1.2.2 Identification of Comparison Beneficiaries**

We used a three-step approach to identify comparison beneficiaries for all eight MAPCP Demonstration states: (1) identification of the geographic area from which the intervention beneficiaries were drawn; (2) identification of primary care practices within the geographic area that are not participating in the states MAPCP Demonstration initiative; and (3) identification of beneficiaries that meet the MAPCP Demonstration eligibility criteria and are attributed to a comparison group primary care practice. For each state, we identified two comparison groups:

- *PCMH comparison group.* Medicare FFS beneficiaries who met MAPCP Demonstration eligibility criteria and attribution criteria to practices that had similar PCMH recognition, but were not participating in the state's multi-payer initiative.

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<sup>1</sup> We restricted the denominator to days alive, which effectively prevented inflating outcomes during the quarter in which a beneficiary died.

- *Non-PCMH comparison group.* Medicare FFS beneficiaries who met MAPCP Demonstration eligibility criteria and attribution criteria to practices without PCMH recognition

In each state, the process began by reviewing the geographic areas of the state MAPCP Demonstration initiative and mapping the areas by county. We next identified counties that might serve as similar comparison geographic areas. If the demonstration permeated the entire state, then comparisons were drawn from counties with similar characteristics in other states. A comparison from outside the state was used only for Vermont, where the Blueprint for Health (Vermont's MAPCP Demonstration initiative) already had a presence in all counties in the state. If the demonstration practices dominated in their respective areas, then the comparison area was drawn from another set of counties elsewhere within the same state. The comparison region in some instances was expanded to ensure that it encompassed a sufficient number of treatment facilities (federally qualified health centers [FQHCs], rural health clinics [RHCs], and critical access hospitals [CAHs]) and NCQA-recognized PCMHs not participating in the MAPCP Demonstration. Finally, in five states, the comparison area is the same as the MAPCP Demonstration county area. **Table 1-1** shows the types of comparison counties for the MAPCP Demonstration states.

**Table 1-1**  
**Intervention and comparison areas by MAPCP Demonstration state**

State	Demonstration area	Proposed comparison area
Maine	11 counties in southern part of state	Same as demonstration counties
Michigan	40 counties	Same as demonstration counties
Minnesota	24 counties	Same as demonstration counties
New York	7 counties in Adirondacks region	16 counties in upstate area; all FQHCs and CAHs in nondemonstration counties; 19 non-PCMH FQHCs from Michigan
North Carolina	7 mostly rural counties scattered across state	16 counties in remainder of state; all RHCs and CAHs in nondemonstration counties; 6 PCMH CAHs from Maine
Pennsylvania	4 counties in northeast region, 5 counties in southeast region	Same as demonstration counties
Rhode Island	3 westernmost counties in state	Same as demonstration counties
Vermont	All 14 counties in state	10 counties in New Hampshire and all FQHCs in Massachusetts; 5 PCMH FQHCs from Maine/Michigan; 6 PCMH RHCs from Maine/Michigan; 6 PCMH CAHs from Maine/Michigan

NOTES: CAH = critical access hospital; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; RHC = rural health clinic.

When comparison practices and beneficiaries were drawn from nondemonstration regions, a preliminary list of candidate counties was created based on several county-level characteristics (e.g., urbanization, mean annual Medicare expenditures, median household income, and the supply of primary care physicians per 100,000 residents) compiled from Medicare and U.S. Census data. Candidate counties were those with values for these

characteristics within the range observed for the MAPCP Demonstration counties. If needed (e.g., in New York), the comparison region was expanded to ensure that it encompassed a sufficient number of PCMHs not participating in the MAPCP Demonstration.

Minnesota is one of two states that do not base PCMH status on NCQA PCMH recognition. Instead, Minnesota uses state HCH certification to define PCMHs. Minnesota considers all HCHs to be part of the MAPCP Demonstration, so the only comparison group is a non-PCMH group consisting of primary care practices without HCH certification. Minnesota has no PCMH comparison group.

After the comparison counties were determined, a list of primary care and multispecialty medical practices in those counties was generated from Medicare claims data. This list was compared with a list of office-based primary care and multispecialty practices to ensure that taxpayer identification numbers found in the claims data represented primary care practices like those involved in the MAPCP Demonstration. If a state initiative includes FQHCs, RHCs, or CAHs, then efforts were made to supplement the comparison group with these types of organizations. These practices were identified through two sources: Organizational National Provider Identification numbers in claims data and organizations listed in the National Plan and Provider Enumeration System. Practices serving fewer than 30 Medicare FFS beneficiaries per year and those involved in other CMS PCMH initiatives or practice-based interventions were deleted from the list of comparison practices. These initiatives include the FQHC Advanced Primary Care Practice Demonstration, Medicare Health Care Quality Demonstration, Independence at Home Demonstration, Health Quality Partners, Physician Group Practice Transitional Demonstration, and Comprehensive Primary Care Initiative. These initiatives were identified through the CMS Master Data Management (MDM) provider extract file; organizations participating in the FQHC Advanced Primary Care Practice Demonstration were identified by RAND.

The same protocol used to attribute individual Medicare beneficiaries to a specific MAPCP Demonstration PCMH was used to assign comparison beneficiaries to each comparison practice. All beneficiaries meeting the MAPCP Demonstration eligibility criteria and assigned to a comparison practice using the state-specific assignment algorithm are members of the comparison group. Eligibility is determined in a manner similar to that described above and using the same “as of” eligibility date used by ARC when attributing beneficiaries to the MAPCP Demonstration practices, with one exception. Comparison group beneficiaries are attributed to a comparison group practice annually and are not reassigned each quarter, as in the process used by ARC for beneficiary assignment to the intervention groups. Once a beneficiary is attributed to a MAPCP Demonstration participating PCMH, the beneficiary is no longer eligible to be attributed to a comparison group practice. These beneficiaries are removed from all previous quarters’ assignment to a comparison group. Given the size of the MAPCP Demonstration comparison groups, the numbers of beneficiaries switching status are very small; removing them thus has negligible impact on comparison groups’ outcomes over time.

MAPCP Demonstration participants are constantly changing during the course of the study because of the entrance of new practices, the withdrawal of others, and attrition resulting from death or other loss of participation eligibility. To emulate this situation among the comparison groups, we check eligibility for the demonstration quarterly and remove from the comparison group any beneficiaries no longer meeting the demonstration eligibility criteria.

Further, we also check quarterly to determine if any comparison group practices have become participants in any demonstration initiatives; if so, we remove them from the comparison group, effective in the quarter in which the practice began participating in the initiative. Beneficiaries previously assigned to these practices move to the intervention group if the ARC assignment process assigned them to a newly participating practice; otherwise, the beneficiary is dropped from the comparison as of that quarter. Lastly, we conduct a “true-up” of the comparison groups annually by reapplying the beneficiary assignment algorithm at the end of each year. As with turnover occurring in MAPCP Demonstration practices and beneficiaries, this process adds new beneficiaries, removes those no longer receiving the plurality of their services from a comparison group practice, and moves beneficiaries and practices from the non-PCMH comparison group to the PCMH comparison group if their assigned practice received recognition as a PCMH during the prior year. No changes in comparison geographic regions were made for the Year Two true-up (first true-up). Because most comparison groups already contained nearly all existing primary care practices in their area, the true-up process generally produced few changes in the composition of comparison practices in most states.

### **1.2.3 Entropy Balanced Weighting of Comparison Beneficiaries for Comparability to MAPCP Demonstration Intervention Beneficiaries**

In general, the propensity score (PS) is the probability that a sampling unit belongs to the intervention group, conditional on a set of observable characteristics (Rosenbaum & Rubin, 1983). In this context, the PS is the probability that a beneficiary is assigned to a MAPCP Demonstration practice. Propensity scores are estimated from a series of logistic regression models relating group status (MAPCP Demonstration or comparison group) to a set of beneficiary-, practice-, and region-level characteristics. The logistic model is estimated separately by state and separately for (1) beneficiaries assigned to MAPCP Demonstration practices and those assigned to comparison PCMHs and (2) beneficiaries assigned to MAPCP Demonstration practices and those assigned to comparison non-PCMH practices. The models are re-estimated quarterly as new beneficiaries are assigned to the MAPCP Demonstration group and new beneficiaries are assigned to PCMH and non-PCMH practices in the comparison group (annually).

The values of the beneficiary-level covariates are taken from the period before the start of state pilot activities; for the practice- and region-level variables, we use data from the demonstration period. Specifically, we use the following variables:

- *Beneficiary-level variables.* Age, sex, Hierarchical Condition Category (HCC) score, Charlson Index comorbidity score, and indicators for race, disability status, Medicaid, end-stage renal disease (ESRD), and institutionalization.
- *Practice-level variables.* Percentage of associated providers with a primary care specialty, solo provider practice, and indicators for FQHC, CAH, and RHCs.
- *Region-level variables.* Median household income (in increments of \$10,000) of beneficiary county of residence and population density of beneficiary county of residence.

In practice, achievement of optimal covariate balance by means of logistic regression and iterative manual model specification could be challenging. We therefore implemented entropy

balanced weights to increase the comparability of the demonstration and comparison groups before estimating the effects of the demonstration. Entropy balanced weights are analogous to propensity scores for treatment and inverse probability of treatment weighting.

This method has several advantages over manually specifying a logistic regression and checking covariate balance iteratively. It requires attention to propensity- score-generated weights for the comparison group. It is not uncommon to achieve excellent covariate balance between intervention and comparison groups with extremely small and extremely large weights. These weights represent observations with minimal overlap in covariates between intervention and comparison groups, where conclusions from multivariate models could be misleading.

Our standard procedure was to cap (recode) weights lower than 0.05 and higher than 20. To put this in terms of randomized assignment, individuals with a less than 1 in 20 chance of assignment to the treatment group and a greater than 20 chance of assignment to the treatment group fall outside these cut-off points. Rather than truncating the sample and dropping these beneficiaries, we choose to recode weights outside these cut-off points to these values (0.05 and 20, respectively). In effect, this preserves the comparison group sample at the cost of less optimal covariate balance.

Following generation of entropy balanced weights and capping of outlier weight values, we examine covariate balance between the intervention and comparison group for each variable described above, using absolute mean standardized difference as a metric (see *Appendix C*). Smaller values of absolute mean standardized difference are considered better because they indicate a closer match between the means of the two samples. Generally a value of less than 0.10 (or 10%) is considered an adequate threshold for purposes of covariate balance between intervention and comparison group. We generally observe absolute mean standardized differences in the range of 0.00 through 0.02 for our intervention and comparison groups.

#### **1.2.4 Qualitative Data and Methods**

To address key evaluation questions and complement the quantitative methods, we use a variety of qualitative methods and data. First, we use secondary qualitative data, such as state applications, interim reports, and notes from monthly conference calls with selected state officials responsible for implementing the program. Second, we conducted semistructured, in-person interviews with a wide range of key informants during state site visits. In subsequent years, we will conduct focus groups with beneficiaries and caregivers.

Site visits to each MAPCP Demonstration state occurred in the fall of 2013. In Year Two of the demonstration, interviews focused on changes and implementation experiences that had occurred since the Year One site visits in 2012. The goal was timely identification of actionable promising practices for CMS and states and links among aspects of state initiative features, practice characteristics, and potential outcomes. Interviews were used to gather and interpret contextual information on how the underlying systems of the multi-payer model operated in the year since we last spoke to stakeholders and practices within the state. We also sought to understand the potential impact on implementation, practice transformation, and outcomes for Medicare and Medicaid beneficiaries and special populations.

The evaluation team developed protocols for the interviews, designed to address the research questions, which were reviewed by CMS (see *Appendix A*). Specifically, each major

research question was “translated” into a set of topics and questions tailored to specific respondent types and state programs (Kvale, 1996; Kvale & Brinkman, 2006). The evaluation team produced six generic respondent type protocols and then customized them based on state-specific features, to ensure that specific and unique features of state initiatives were addressed adequately during the interviews. Respondent types included (1) state officials; (2) physicians and administrators of practices or health systems participating in the MAPCP Demonstration; (3) individuals representing CHTs and networks; (4) individuals representing payer organizations, including Medicaid; (5) individuals representing local chapters of physician and clinical professional associations; and (6) individuals representing Offices of Aging and patient advocates.

Interviews with state officials focused on the state’s progress in implementing the initiative in Year Two of the demonstration and on how their multi-payer initiative, including the payment model and other efforts to support practice transformation (such as learning collaboratives), had progressed since our last site visit. Interviews with staff from participating PCMH practices, including staff from CHTs (for those states using CHTs as extensions of the PCMH practices), focused on changes in Year Two made by practices in delivery of care and health information technology use and capabilities as a result of the state initiative. We also focused on their perceptions of the impact on quality and efficiency.

General respondent selection criteria were developed (e.g., to get representatives from diverse types of payers and practices), and potential respondents were identified within each respondent type category primarily through review of secondary documents, input from state program officials, and MAPCP Demonstration tracking documents. We also occasionally used a “snowball” sampling technique (e.g., asking respondents who else they would recommend we speak to about a particular topic). Based on the geographic areas in each state initiative, the site visit team also targeted different areas of each state, based either on the predefined initiative areas or across urban and rural areas. The evaluation team chose the final list of interviewees, which was confidential.

Types of state officials interviewed included program staff responsible for designing or implementing the multi-payer initiative within a state and Medicaid agency staff knowledgeable about Medicaid’s participation as a payer in the initiative. Respondents from participating private payers and patient advocates were selected based on their involvement in the state initiative. Provider respondents—including practice staff, representatives from provider organizations and networks/pods, and CHTs (where applicable, because some states do not include these kinds of teams or networks in their initiative)—were selected to maximize diversity (e.g., urban/rural, size, location within the state, payer mix).

Those selected for interviews were sent an initial e-mail request to participate. Those not responding to the e-mail received a follow-up phone call requesting an interview. The majority of individuals contacted agreed to be interviewed. When individuals were unable or unwilling to participate in an interview, however, we contacted an alternate on our respondent list. The majority of interviews were scheduled face-to-face during site visits, but some occurred by phone before, during, and after the site visit. Interview duration ranged from 45 to 90 minutes, depending on the type of respondent. A total of 269 interviews were conducted during the second round of site visits. **Table 1-2** provides a breakdown of the interviews by state and respondent type.

A team of six to eight site visit staff was deployed to each state to conduct interviews. Site visit teams were composed of researchers with different types of substantive and methodological expertise and were matched to interview respondent types (e.g., physician researchers interviewing physicians, researchers with expertise in state policy interviewing state officials). Interviews were recorded, and note-takers used the audio files to fill in gaps in their typed notes produced during the interview. Interview notes then were coded and analyzed.

To manage and analyze the large volume of primary and secondary qualitative data, we used the qualitative data analysis software NVivo 9.<sup>2</sup> This software is designed especially for qualitative and mixed-methods research and allows integration of other data sources and comparisons within and across states over time (Bazeley & Richards, 2000; Richards, 2009; Sorensen, 2008).

First, site visit interview notes were loaded into NVivo. Second, we created a basic coding scheme allowing us to identify key topics and substantive information based on the interview data by state, respondent type, and phase of evaluation (Bradley, Curry, & Devers, 2007; Miles & Huberman, 1994). The code structure and specific codes were developed from the conceptual framework for the MAPCP Demonstration evaluation, which is organized around the seven domains of the evaluation and related research questions.

In this Second Annual Report, our analysis focuses on how implementation, particularly practice transformation, relationships with other providers (e.g., specialists and hospitals), and linkages with other community organizations, has progressed and changed since Year One site visits. When evaluating each state MAPCP Demonstration, we primarily conducted within-state case studies, although the report includes one cross-state chapter examining major similarities and differences across demonstration states, programs, and aspects of their implementation experience to date. Our primary focus is to describe implementation progress and key changes within state initiatives since Year One site visits; state program features and their evolution over time; the extent to which implementation and practice transformation occurred as intended; perspectives of key stakeholders and lessons learned; and perspectives on the potential impact on Medicare and Medicaid beneficiaries and other special populations.

### **1.2.5 Quantitative Data for Assessment of Outcomes**

Our quantitative analyses relied on Medicare administrative and claims data. Medicaid analyses will be conducted for the final report. Below, we describe in more detail the Medicare data and the methods used to construct the analytic measures of demographic characteristics, health status, health care utilization and expenditures, quality of care, and access to and coordination of care. By examining the first 2 years' patterns of increases or declines in use of health care services, Medicare expenditures, and potential improvements in quality, access, and care coordination, we used the quantitative data to determine whether the MAPCP Demonstration

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<sup>2</sup> <http://www.qsrinternational.com>

**Table 1-2**  
**Number of interviews by type and state in Year Two site visits for evaluation of the MAPCP Demonstration**

State	State agency staff	Practices	Community health teams/community care networks <sup>2</sup>	Payers	Provider associations	Office of Aging staff/patient advocates <sup>7</sup>	Total per state
Maine	5	12	4	4	1	4	30
Michigan	6	28	—	3	9 <sup>6</sup>	2	48
Minnesota	6	15	—	4	1	5	31
North Carolina	9	10	11 <sup>3</sup>	3	1	1	35
New York	4	9	9 <sup>4</sup>	5	3	—	30
Pennsylvania	4 <sup>1</sup>	15	—	4	2	1	26
Rhode Island	8	20	—	8	3	1	40
Vermont	5 <sup>1</sup>	10	9 <sup>5</sup>	3	1	1	29
Total	50	119	30	34	21	15	269

NOTES:

<sup>1</sup> Included contractors, staff of nonprofit organizations, public-private partnerships, and academic institutions involved with the state initiative.

<sup>2</sup> Michigan, Minnesota, Pennsylvania, and Rhode Island do not include community health teams or community care networks as part of their initiatives.

<sup>3</sup> In North Carolina, this category included care managers provided by community care networks.

<sup>4</sup> In New York, this category included “pod” coordinators, health system administrators, and care managers.

<sup>5</sup> In Vermont, this category included community health teams and SASH staff.

<sup>6</sup> In Michigan, this category included physician organizations.

<sup>7</sup> No Office of Aging staff and patient advocates were interviewed in New York because of site visit scheduling difficulties.

MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; SASH = Support and Services at Home.

programs are associated with success in addressing the health system challenges they attempted to mitigate by implementing the PCMH model. We also used these data to allow us to validate states' underlying assumptions about achieving Medicare budget neutrality within the 3-year demonstration period.

## Medicare Data

**Historical Denominator File.** ARC provided a Denominator File containing CMS HCC risk scores. The file covers a 2-year period before the start of each state MAPCP Demonstration and includes all beneficiaries alive at the start of the historical period who either (1) lived in each state's demonstration area at any point during the time period covered or (2) were assigned to one of the state demonstration practices at the start of each state demonstration period. We specifically used this file to determine the cut-off points across all states for the baseline HCC score categorization.

**Medicare Enrollment Data Base (EDB).** We used the EDB to identify days of eligibility for the MAPCP Demonstration and provide an estimate of the fraction of the demonstration period for which beneficiaries are eligible. This file also provides beneficiary demographic and Medicare eligibility information for the analyses (e.g., date of birth, sex, race, date of death).

**Medicare TAP files.** The TAP files contain inpatient, hospital outpatient, physician, skilled nursing facility (SNF), home health agency (HHA), hospice, and durable medical equipment (DME) claims for demonstration and comparison beneficiaries from January 2010 forward. These files do not include Medicare Part D (prescription drug) or Medicare Advantage billing data, nor Medicaid claims for Medicare and Medicaid dual enrollees. These claims are provided to ARC monthly, and ARC "nets" the claims files to identify final transaction claims quarterly, allowing for a 4-month claims run-out period at the end of each payment quarter. At each quarterly processing, prior quarterly netted claims files are updated with claims data processed after the prior cut-off dates for up to a 2-year run-out period, virtually ensuring that all paid claims are included.

**Medicare National Claims History (NCH) files.** RTI extracts data directly from the NCH files using the claim *discharge date* to obtain claims for hospital inpatient services and *through date* to obtain claims for outpatient services, physician, DME, HHA, and hospice services before 2011.<sup>3</sup> For this report, NCH claims with dates of service from January 1, 2006, through December 31, 2010, were obtained.

**Lists of practices and beneficiaries in other CMS demonstrations that are excluded from comparison group practices and beneficiaries.** Practices and beneficiaries identified in these lists are excluded from the comparison group, as described in more detail in **Section 1.2.2**:

- RAND provides a list of FQHCs participating in the CMS FQHC Advanced Primary Care Practice Demonstration.

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<sup>3</sup> RTI used the ARC TAP data from January 2011 forward.

- The MDM system contains identification and payment information for beneficiaries, providers, and organizations participating in CMS-sponsored accountable care organizations and coordinated care organizations. Programs identified in the MDM for exclusion from the comparison group for the Second Annual Report were
  - Independence at Home Practice Demonstration,
  - Medicare Health Care Quality Demonstration,
  - Health Quality Partners,
  - Physician Group Practice Transitional Demonstration, and
  - Comprehensive Primary Care Initiative.

## Analytic Variables

In this report, we analyze changes during the first 24 months of the MAPCP Demonstration period in the quarterly rate of growth for 40 utilization, Medicare expenditure, quality of care, access, and coordination of care measures. We also assess the equivalency of trends in quarterly rates of the outcome measures for demonstration beneficiaries relative to comparison group beneficiaries. *Table 1-3* describes the time periods for analysis for the eight participating states.

**Table 1-3**  
**Analysis periods used in the evaluation of the MAPCP Demonstration**

Demonstration period start date	First demonstration period final end date	Second demonstration period final end date	Months of demonstration data	Pre- demonstration period start date	Pre- demonstration period end date
New York, Rhode Island, Vermont 7/1/2011	6/30/2012	6/30/2013	24	1/1/2006	6/30/2011
North Carolina 10/1/2011	9/30/2012	9/30/2013	24	1/1/2006	9/30/2011
Maine, Minnesota, <sup>1</sup> Michigan, Pennsylvania 1/1/2012	12/31/2012	12/31/2013	24	1/1/2006	12/31/2011

NOTES:

<sup>1</sup> Minnesota started the MAPCP Demonstration with North Carolina, in Cohort 2. Due to data availability, attribution for Minnesota was done only back to Quarter 3. For this reason, it is considered a member of Cohort 3 for analysis purposes. Given that this decision reassigns only the first quarter of the demonstration and the expectation is that the demonstration's impact will not be immediate, this decision is not expected to significantly influence the quantitative analysis results.

MAPCP = Multi-Payer Advanced Primary Care Practice.

Below, we describe the construction of analytic variables used in the regression modeling. Demographic and health status characteristics are developed at the beneficiary level using common reference points of time across beneficiaries, either during the year before a beneficiary was first attributed to a MAPCP Demonstration practice or at the time a beneficiary first was attributed to a demonstration practice. The beneficiary-level data are used in the entropy balanced weighting procedure and the outcomes models. We also constructed a quarterly variable reflecting the percentage of the quarter the beneficiary met the demonstration eligibility criteria during each predemonstration quarter and each of the eight demonstration quarters. Lastly, we constructed a number of utilization, expenditure, quality of care, access, and

coordination of care measures described in more detail below. Additional detail on the construction of the analytic variables at the beneficiary level is provided in *Appendix D*.

**Beneficiary eligibility.** RTI uses the Medicare EDB to determine daily eligibility during the predemonstration and demonstration periods. Because beneficiaries do not necessarily remain eligible for the MAPCP Demonstration throughout an entire quarter in which they were attributed to a participating demonstration practice or comparison group practice or for the predemonstration period, we calculate for each individual a quarterly eligibility fraction, defined as the number of eligible days within the quarter divided by the total number of days in that quarter. For example, a beneficiary who is MAPCP Demonstration-eligible for 30 days out of 90 has an eligibility fraction of 0.33 for that quarter. The eligibility fraction also is used to calculate weighted average outcomes for each state and is one component of the weight used in the weighted regression models. Beneficiaries with limited eligibility are down-weighted, thereby preventing them from exerting undue influence on the evaluation results.

**Beneficiary demographic characteristics.** Age, sex, race, Medicare status (aged-in versus disabled), and urban residence variables are created using the Medicare EDB. Age is defined by the date the beneficiary was first assigned to a MAPCP Demonstration practice or comparison practice. Sex and race use the Medicare EDB definitions, and that designation does not change over time. Medicare status is constructed using the original reason for entitlement, which also does not change over time. The zip code of the beneficiary's residence at the time of first assignment to a demonstration or comparison group practice is used to determine if a beneficiary resides in a Metropolitan Statistical Area. If so, then the beneficiary is classified as living in an urban area; otherwise, the beneficiary is classified as living in a rural area.

**Medicare and Medicaid dual eligibility status.** The Medicare EDB is used to determine Medicare and Medicaid dually eligible beneficiaries during the 1-year period immediately before their first assignment to a demonstration practice or comparison group practice. A dichotomous variable is created to reflect dual eligibility status.

**Baseline HCC risk score.** The HCC risk adjustment model uses beneficiary demographic information (e.g., sex, age, Medicaid status, disability status) and diagnosis codes reported in Medicare claims data from the previous year to predict payments for the current year. This risk score often is used as a proxy for beneficiary health status (severity of illness). It is based on the average of all Medicare FFS beneficiaries' health risk scores, calculated using the CMS HCC risk adjustment model.<sup>4</sup> The community HCC risk score is calculated for each beneficiary using claims one year before his or her initial assignment date to a demonstration practice or comparison group practice, unless one or more of the following criteria were met:

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<sup>4</sup> More information can be found at <http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html>

- *New enrollee.* If the beneficiary met demonstration eligibility criteria<sup>5</sup> during the baseline year for fewer than 9 months (75%), a new enrollee HCC score was calculated using only the demographic characteristics.
- *Institutionalized.* A beneficiary was assigned an institutional risk score if he or she had two or more nursing home evaluation and management (E&M) visits within 120 days.
- *ESRD.* For beneficiaries with ESRD during the baseline period, the HCC community risk score was multiplied by the ESRD factor (8.937573); they are automatically assigned to the highest HCC risk score quartile.

Beneficiaries then were assigned to one of three HCC risk score categories (low, medium, or high) created using the 2011 HCC risk scores in the historical Denominator file from ARC. The cut-off points were determined to contain 25 percent of the predicted healthiest beneficiaries in the low category, 25 percent of the predicted sickest beneficiaries in the high category, and the remaining 50 percent of beneficiaries in the medium category:

- Low: 0 to 0.48.
- Medium: Higher than 0.48 and lower than or equal to 1.25.
- High: Higher than 1.25.

**Health status.** Two additional analytic variables were created to reflect health status during the year before the beneficiary being first assigned to a demonstration or comparison group practice:

- *Charlson index.* The Charlson comorbidity index was created using claims data from the inpatient, outpatient, physician, and home health claims files (Charlson, Pompei, Ales, & MacKenzie, 1987). Claims from hospice and DME providers were excluded from the calculation of this variable.
- *Comorbid conditions.* Beneficiaries were identified as having a comorbid condition if they have one inpatient claim with the clinical condition as the principal diagnosis or two or more physician or outpatient department (OPD) claims for an E&M service (Current Procedural Terminology, or CPT, codes 99201–99429) with an appropriate principal or secondary diagnosis. The diagnoses on the OPD<sup>6</sup> claims are captured if there is a CPT code of 99201–99429 on one of the revenue center lines. The physician or OPD E&M visits have to occur on different days. Past studies conducted by RTI identified the following as the most frequently occurring comorbid conditions: heart failure; coronary artery disease; other respiratory disease; diabetes

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<sup>5</sup> Beneficiaries did not have to reside in the MAPCP Demonstration area during the baseline period to be considered eligible. All other MAPCP Demonstration eligibility criteria are applicable.

<sup>6</sup> FQHC and RHC claims are included if the CPT code is contained on the revenue center line of the OPD claim.

without complications; diabetes with complications; essential hypertension; valve disorders; cardiomyopathy; acute and chronic renal disease; renal failure; peripheral vascular disease; lipid metabolism disorders; cardiac dysrhythmias and conduction disorders; dementia; stroke; chest pain; urinary tract infection; anemia; malaise and fatigue (including chronic fatigue syndrome); dizziness, syncope, and convulsions; joint disorders; and hypothyroidism.

**Practice- and area-level characteristics.** Select practice- and area-level characteristics were considered in all regression modeling:

- *Practice type.* A dummy indicator was created using claims data to determine whether the beneficiary's assigned practice was office-based, an FQHC, an RHC, or a CAH.
- *Percentage of providers in the practice who are primary care providers.* This is a measure of the proportion of providers in a beneficiary's assigned practice who are primary care providers. This measure was created from the claims data, using provider specialty data for the unique providers that billed to a practice.
- *Size of the assigned practice.* A binary variable was constructed to indicate if a beneficiary's assigned practice had one or more than one provider.
- *Household income.* This is a measure of the median household income for the beneficiary's county of residence in 2010, derived from the Area Resource File.
- *Population density.* This is a measure of the median population density for the beneficiary's county of residence in 2010, derived from the Area Resource File.

**Medicare expenditures.** Medicare expenditures are calculated on a beneficiary-quarter level for regression modeling. For each beneficiary, per-beneficiary-per-month (PBPM) expenditures are estimated to be one-third of their quarterly expenditures. The expenditure variables use Medicare-paid amounts and include Medicare Parts A and B payments only, therefore excluding third-party and beneficiary liability payments. MAPCP Demonstration payments are removed from the calculations because the budget neutrality calculation evaluates changes in all other Medicare expenditures relative to the demonstration payments to participating practices. Medicare expenditures are not risk adjusted<sup>7</sup> or price standardized.<sup>8</sup> Medicare claims are included in the expenditure estimates if services were provided while a beneficiary was eligible for the demonstration and attributed to a participating provider. Each beneficiary's eligibility fraction is used to extrapolate the expenditure data if a beneficiary does

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<sup>7</sup> We use entropy-balanced weighting to balance beneficiary, practice, and geographic characteristics among the MAPCP Demonstration and comparison groups in regression models.

<sup>8</sup> One potential behavioral change during the demonstration is a shift in the mix of providers treating the MAPCP Demonstration beneficiaries, from more intensive to less intensive providers or sites of service (i.e., movement from academic medical centers to community hospitals), either through a conscious decision by participating providers or because of improvement in beneficiary health status. Price standardization of Medicare expenditures potentially could remove the beneficial effect on lower expenditures that might be observed from this behavioral change.

not have a full quarter of Medicare FFS eligibility with Medicare as the primary payer, as claims for services provided during periods of ineligibility may not be contained in the Medicare claims files we use for analysis. We did not, however, extrapolate the expenditure data if the beneficiary lost eligibility because of death during the quarter. Medicare PBPM expenditures are categorized as follows, with details provided in *Appendix D*:

- *Total Medicare expenditures*. Overall expenditure amounts from the physician, inpatient, SNF, OPD, home health, hospice, and DME Medicare claims files.
- *Total Medicare expenditures for services with a principal diagnosis of a behavioral health condition*. Overall expenditure amounts for which the claim had a principal diagnosis of a behavioral health condition. This outcome was examined for an analysis of beneficiaries with behavioral health conditions.
- *Total Medicare expenditures for services with a secondary diagnosis of a behavioral health condition*. Overall expenditure amounts for which the claim had a secondary diagnosis of a behavioral health condition. This outcome was examined for an analysis of beneficiaries with behavioral health conditions.
- *Acute-care inpatient hospitals, including CAHs*. Expenditure amounts for acute inpatient hospital services, identified using provider numbers for traditional acute-care hospitals and CAHs.
- *Emergency room (ER) visits and observation stays*. Facility and physician expenditures for ER visits and observation stays not leading to hospitalization. These visits or stays were identified using the OPD and physician Medicare claims files.
- *Other categories of Medicare services*. Expenditures for post-acute, outpatient, specialty physician, primary care physician, home health, other facility, laboratory, imaging, and other services (includes other Part B services, DME, and hospice).

**Utilization.** Following an approach similar to that for Medicare expenditures, the following utilization measures are calculated on a beneficiary-quarter level for regression modeling for this report (i.e., visits/admissions per 1,000 beneficiary-quarters). Each beneficiary's eligibility fraction is used to extrapolate utilization in a manner similar to that used for the expenditure data. More detailed specifications of utilization measures are provided in *Appendix D*.

- *All-cause hospitalizations*. Count of all admissions reported in the inpatient file for that quarter. Multiple claims for acute admissions from traditional acute-care and CAHs that represent transfers between hospitals are combined into a single record.
- *Emergency room visits*. Count of all ER visits, including visits not leading to hospitalization. ER visits not leading to hospitalization are identified on the OPD and physician Medicare claims files. We limit counts of ER visits to one per day.

- *Unplanned readmissions.* Count of unplanned hospitalizations occurring within 30 days following a live discharge. To discriminate between planned and unplanned admissions, we used a list of inpatient procedures considered “potentially planned” developed by Yale University and the Yale New Haven Hospital Center for Outcomes Research & Evaluation (Yale-CORE) (Horwitz et al., 2011).
- *Behavioral health inpatient admissions.* Count of admissions reported in the inpatient file with a principal diagnosis of a behavioral health condition. This outcome was examined for an analysis of beneficiaries with behavioral health conditions.
- *Behavioral health emergency room visits.* Count of all ER visits, including visits not leading to hospitalization, with a principal diagnosis of a behavioral health condition. This outcome was examined for an analysis of beneficiaries with behavioral health conditions.
- *Behavioral health outpatient visits.* Count of visits (defined using select evaluation and management codes) with a principal diagnosis of a behavioral health condition. This outcome was examined for an analysis of beneficiaries with behavioral health conditions.

**Quality of care.** The following outcomes were chosen to assess process measures of quality of care and adherence to evidence-based guidelines for two chronic conditions prevalent in the Medicare population, diabetes and ischemic vascular disease (IVD). Several other outcomes related to quality also were examined, including avoidable inpatient admissions and mortality. More detailed specifications of quality of care outcomes are provided in *Appendix D*.

- *Diabetes process of care measures.* Six process of care measures for persons with diabetes were examined: receipt of HbA1c testing, retinal eye examination, low-density lipoprotein cholesterol (LDL-C) screening, medical attention for nephropathy, whether all four preceding measures were received, and whether or not none of the four preceding measures were received. Beneficiaries are considered to have diabetes if they have, in the demonstration year or the year before the demonstration year (2 years), at least two outpatient or non-acute encounters with a diabetes diagnosis, or at least one acute inpatient visit with a diabetes diagnosis. These measures are calculated using a full year of data instead of quarterly data.
- *IVD process of care measure.* The measure examined was receipt of total lipid panel for beneficiaries with IVD. Beneficiaries are considered to have IVD if they have, in the demonstration year and the year before the demonstration year (2 years), at least one outpatient or non-acute encounter with an IVD diagnosis, or at least one acute inpatient visit with an IVD diagnosis. This measure is calculated using a full year of data instead of quarterly data.
- *Avoidable catastrophic events.* These events were defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute

cerebrovascular accident (stroke), and sepsis. This measure is calculated on a beneficiary-quarter level.

- *Prevention Quality Indicator (PQI) inpatient admissions, overall, acute, and chronic.* Overall PQI admissions include admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, chronic obstructive pulmonary disease, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes. Acute PQI admissions include admissions for bacterial pneumonia, urinary tract infection, and dehydration. Chronic PQI admissions include admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, chronic obstructive pulmonary disease, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes. This measure is calculated on a beneficiary-quarter level.

**Access to care and coordination of care.** We examined selected utilization outcomes that are indicators of access to care and coordination of care. Similar to the utilization outcomes, most of these measures are calculated on a beneficiary-quarter level for regression modeling. More detailed specifications of access and coordination of care outcomes are provided in *Appendix D*.

- *Primary care visits per 1,000 beneficiary-quarters.* Count of visits (defined using select E&M codes) for which the rendering provider had a primary-care-related specialty recorded on the claim (e.g., general practice, internal medicine, family practice).
- *Medical specialist visits per 1,000 beneficiary-quarters.* Count of visits (defined using select E&M codes) for which the rendering provider had a medical specialty (e.g., gastroenterology, cardiology, pulmonary disease, neurology) recorded on the claim.
- *Surgical specialty visits per 1,000 beneficiary-quarters.* Count of visits (defined using select E&M codes) for which the rendering provider had a surgical specialty (e.g., orthopedic surgery, thoracic surgery) recorded on the claim.
- *Primary care visits as a percentage of total visits.* Number of primary care visits per year as a percentage of the total number of ambulatory care visits (defined using select E&M codes) per year. Having a higher percentage indicates greater use of primary care services relative to specialist services. This measure is calculated using a full year of data instead of quarterly data.
- *Unplanned readmissions.* This measure is defined above in the Utilization section.
- *Follow-up visits within 14 days after discharge per 1,000 beneficiaries with a live discharge.* Count of clinical follow-up visits (defined using select E&M codes) within 14 days after beneficiaries were discharged from the hospital.

- *Continuity of care index.* The continuity of care index measures the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. The value of the continuity of care index, measured annually, ranged from 0 to 1, with values closer to 1 indicating a higher concentration of visits in the PCMH or by referral from a PCMH provider. This measure is calculated using a full year of data instead of quarterly data.

### 1.2.6 Quantitative Methods for Evaluation of Early Outcomes

The MAPCP Demonstration evaluation is based on comparing (regression-adjusted) changes in average payments and health care utilization between beneficiaries receiving services from practices participating in the MAPCP Demonstration and beneficiaries receiving care from two distinct sets of comparison practices: comparison PCMHs and comparison non-PCMHs. The evaluation goal is to quantify two main changes:

- The change **relative to comparison PCMHs**. This is the change (increase or decrease) in outcomes between the baseline and demonstration periods among beneficiaries assigned to MAPCP Demonstration practices, compared to the change in outcomes over the same time period for beneficiaries assigned to comparison PCMH practices.
- The change **relative to comparison non-PCMHs**. This is the change (increase or decrease) in outcomes between the baseline and demonstration periods among beneficiaries assigned to MAPCP Demonstration practices, compared to the change in outcomes over the same time period for beneficiaries assigned to comparison non-PCMH practices.

The change relative to comparison PCMHs captures the change associated with a number of activities undertaken after CMS joined the state initiative—those implemented by CMS (e.g., payment of MAPCP Demonstration fees, provision of practice feedback reports on utilization and expenditures, and beneficiary-specific utilization reports), the state and its partners (e.g., CHTs, if they previously did not exist), and the participating practices—but to which comparison PCMHs were not exposed. The change relative to non-PCMHs in the comparison group is broader. Not only does it capture the change associated with the aforementioned activities, but also it includes the change associated with becoming a recognized PCMH and gaining exposure to activities and interventions related to transforming into a PCMH.

The statistical approach for the quantitative data analysis consists of baseline descriptive statistics and four types of regression modeling:

- *Linear regression*, used for all expenditure outcomes.
- *Negative binomial regression*, used for all visit outcomes.
- *Logit regression*, used for the six quality of care outcomes for beneficiaries with diabetes and the one quality of care outcome for those with IVD.

- *Ordered logit regression*, used for two access to care measures—primary care visits as a percentage of total visits and the continuity of care index.

The regression models form the basis for measuring the two changes: one relative to beneficiaries assigned to the comparison PCMHs and the second relative to beneficiaries assigned to the comparison non-PCMHs. For each outcome, therefore, the model is estimated twice.

## Descriptive Statistics

For initial descriptive statistics, we report demographic and health status characteristics of Medicare FFS beneficiaries participating in each state initiative during the first 2 years of the MAPCP Demonstration. We aggregate the characteristics to the state level, reporting either the mean attribute (e.g., mean age) or the percentage of demonstration beneficiaries with the attribute (e.g., percentage White). These statistics are calculated using each beneficiary's eligibility fraction during the baseline period as a weight to produce weighted means and percentages. We also report in *Appendix E* the weighted quarterly averages of major outcomes separately for demonstration and comparison group beneficiaries. The weighted averages cover the first eight quarters of the demonstration period, as well as the eight quarters immediately preceding the demonstration. The weights used to calculate these averages are the analytic weights—the combination of quarterly eligibility fractions and entropy balancing weights. Though entry into the MAPCP Demonstration is rolling and beneficiary dependent, average quarterly outcomes are reported for the group as a whole.

## Regression Modeling

The main component of the analysis is estimation of the regression models. As mentioned above, the models are estimated using two distinct comparison groups: beneficiaries assigned to comparison PCMHs and beneficiaries assigned to comparison non-PCMHs. We start by describing the linear version of the regression model that is used for the Medicare payment outcomes. The analogue for the nonlinear regressions will be discussed later in this section. The model is written as follows:

$$Y_{ijt} = \alpha_0 + \alpha_1 I_{ij} + \beta_{0,t} Q_t + \beta_1 \text{Pilot}_j + \delta X_{ij} + \lambda \text{Assign}_{ijt} + \gamma_1 \text{Assign}_{ijt} * I_{ij} * Q_{t=dq\_1} + \gamma_2 \text{Assign}_{ijt} * I_{ij} * Q_{t=dq\_2} + \dots + \gamma_s \text{Assign}_{ijt} * I_{ij} * Q_{t=dq\_s} + \varepsilon_{ijt}. \quad (1.1)$$

In *Equation 1.1* we define the following variables:

- $Y_{ijt}$ —the outcome in quarter  $t$  for beneficiary  $i$  assigned to practice  $j$ .
- $I_{ij}$  ( $= 0,1$ )—a time-invariant indicator equal to 1 if the beneficiary  $i$  is assigned to a MAPCP Demonstration practice, and 0 otherwise.
- $Q_t$  ( $= 0,1$ )—a series of indicators identifying each calendar quarter of data.

- $Pilot_j$  ( $= 0,1$ )—a time-invariant indicator equal to 1 if practice  $j$  participated in the state PCMH initiative. Before CMS joined each state’s initiative, PCMH activities were ongoing in each state. These activities involved payment redesign and practice transformation efforts supported by state and private payers. For practices in the comparison group,  $Pilot_j = 0$  in each quarter. In New York, North Carolina, and Pennsylvania,  $Pilot_j$  was not included in the regression model, because all MAPCP Demonstration practices had participated in pilot activities before the start of the demonstration.<sup>9</sup>
- $Assign_{ijt}$  ( $= 0,1$ )—for a beneficiary assigned to a MAPCP Demonstration, this is an indicator that switches from 0 to 1 in the first quarter  $t$  that beneficiary  $i$  was assigned to the MAPCP Demonstration practice, which is also the quarter  $t$  that MAPCP Demonstration fees were first paid for beneficiary  $i$ . The indicator remains = 1 for all subsequent quarters. For beneficiaries assigned to comparison practices,  $Assign_{ijt} = 0$  for all quarters before the start of the MAPCP Demonstration in the state, and then switches to 1 in the first quarter after the start of the demonstration where the beneficiary was assigned to a comparison practice. The indicator remains = 1 for all subsequent quarters.
- $Q_{t=dq\_1}, Q_{t=dq\_2}, \dots, Q_{t=dq\_s}$ —indicators for the 1st through  $s$ th demonstration quarters. The first quarter in our sample, January–March 2006, is counted as  $t = 1$ . For the cohort 1 states (New York, Rhode Island, Vermont,) we had data from 22 baseline quarters and 8 demonstration quarters, so  $dq\_1 = 23, \dots, dq\_8 = 30$ . For the cohort 2 state (North Carolina),  $dq\_1 = 24, \dots, dq\_8 = 31$ , and for the cohort 3 states (Minnesota<sup>10</sup>, Maine, Michigan, Pennsylvania), we have  $dq\_1 = 25, \dots, dq\_8 = 32$ . The demonstration quarter indicators are interacted with the indicator for assignment to a practice after the start of the MAPCP Demonstration,  $Assign_{ijt}$ , and with the indicator for being in the demonstration group,  $I_{ij}$ . Because of the rolling entry of beneficiaries into the demonstration,  $Assign_{ijt}$  switches from 0 to 1 at different points in time for different beneficiaries. For example, for a beneficiary attributed to a MAPCP Demonstration practice during the first demonstration quarter,  $Assign_{ijt} = 1$  for  $t \geq dq\_1$ . For a beneficiary who was attributed during the second demonstration quarter,  $Assign_{ijt} = 1$  for  $t \geq dq\_2$ , etc.
- $X_{ij}$ —a vector of beneficiary- and practice-level covariates.
  - *Beneficiary-level variables.* Age, sex, HCC score (prospective, based on prepilot data), Charlson comorbidity score, and indicators for White, disability status, Medicaid, ESRD, and institutionalization.

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<sup>9</sup> Hence,  $I_{ij}$  and  $Pilot_j$  are colinear and could not be included simultaneously as covariates in the model.

<sup>10</sup> Minnesota started the MAPCP Demonstration with North Carolina, in Cohort 2. Attribution for Minnesota, however, was done only back to Quarter 3. For this reason, it is considered a member of Cohort 3.

- *Practice-level variables.* An indicator of solo practitioner practice, proportion of associated billing providers with primary care specialties, FQHCs, CAHs, and RHCs.
- *County-level variables.* Median household income (in increments of \$10, 0000) and population density in the beneficiary’s most recent county of residence.
- *State-level variables.* In the three states that include some out-of-state practices in their comparison groups, we include a variable identifying the out-of-state practices to control for any time-invariant differences between the outcomes across the states. In New York, the model includes a state fixed effect for the Michigan practices included in the comparison group. In North Carolina, the model includes a variable for the Maine practices included in the comparison group. In Vermont, the majority of comparison practices came from New Hampshire, with the addition of several practices from Maine, Massachusetts, and Michigan. State fixed effects for these latter three states were included in the Vermont analyses.
- $\varepsilon_{ijt}$ —a residual term representing unobserved heterogeneity in the outcome unexplained by any of the other covariates.

The key coefficients of interest measure the following:

- $\alpha_1$ —the difference in the quarterly average outcome, controlling for other covariates, between the MAPCP Demonstration and comparison groups before the demonstration or state initiative activities.
- $\beta_{0,t}$ —the quarterly effect for (calendar) quarter  $t$ . We also refer to **Equation 1.1** as a quarterly fixed effects (QFE) model. The quarterly effects track performance (e.g., total Medicare expenditures) for the comparison group and could accommodate arbitrary trends (e.g., linear, quadratic) in the outcome. They also provide a benchmark for demonstration impacts discussed below.
- $\gamma_1, \gamma_2, \dots, \gamma_s$ —measures the change during the first  $s$  quarters of the MAPCP Demonstration.

The  $\gamma_1, \gamma_2, \dots, \gamma_s$  coefficients are interpreted as follows. Consider first a beneficiary in the comparison group (PCMH or non-PCMH), so that  $I_{ij} = 0$  and  $\text{Pilot}_{ijt} = 0$ . If  $t = b$  denotes a particular baseline quarter and  $t = dq\_1$  is the first demonstration quarter, the predicted change in average outcome (setting  $\varepsilon_{ijt} = 0$  in **Equation 1.1**) is

$$\Delta_{CG} = (\alpha_0 + \beta_{0,dq\_1} + \delta X_{ij} + \lambda) - (\alpha_0 + \beta_{0,b} + \delta X_{ij}) = \lambda + \beta_{0,dq\_1} - \beta_{0,b}.$$

Consider also a beneficiary assigned to a MAPCP Demonstration practice in the first demonstration quarter ( $t = dq\_1$ ) and suppose that the practice participated in pilot activities during quarter  $t = b$ . For this beneficiary,  $I_{ij} = 1$ ,  $\text{Pilot}_{ij,b} = \text{Pilot}_{ij,dq\_1} = 1$  and  $\text{Assign}_{ij,dq\_1} = 1$  and the predicted change in average outcome from **Equation 1.1** is

$$\begin{aligned}\Delta_{\text{MAPCP}} &= (\alpha_0 + \alpha_1 + \beta_{0,\text{dq}_1} + \beta_1 + \delta X_{ij} + \lambda + \gamma_1) - (\alpha_0 + \alpha_1 + \beta_{0,b} + \beta_1 + \delta X_{ij}) \\ &= (\lambda + \beta_{0,\text{dq}_1} - \beta_{0,b}) + \gamma_1.\end{aligned}$$

Comparing the change or trend in predicted average outcome between the beneficiary assigned to the MAPCP Demonstration practice and the beneficiary assigned to the comparison practice, we see that  $\Delta_{\text{MAPCP}} - \Delta_{\text{CG}} = (\lambda + \beta_{0,\text{dq}_1} - \beta_{0,b}) + \gamma_1 - (\lambda + \beta_{0,\text{dq}_1} - \beta_{0,b}) = \gamma_1$ . Hence,  $\gamma_1$  represents the regression-adjusted between-group difference (i.e., demonstration vs. comparison) of the difference in outcome between the baseline quarter and the first quarter of the demonstration. This interpretation is independent of the choice of baseline quarter  $t = b$ , and it continues to hold if the MAPCP Demonstration practice did not participate in pilot activities during baseline quarter  $t = b$  (so that  $\text{Pilot}_{ij,b} = 0$ ). For example, suppose that between a given baseline quarter and the first quarter of the demonstration, the regression-adjusted outcome difference is +\$5 for beneficiaries assigned to demonstration practices (and for whom fees were paid in the first demonstration quarter) and +\$10 for beneficiaries assigned to comparison PCMHs. The difference-in-difference (D-in-D) coefficient for the first demonstration quarter is then  $\gamma_1 = \$5 - \$10 = -\$5$ . The negative sign indicates that the growth in the outcome was smaller for beneficiaries assigned to demonstration practices than for the comparison group. We generally interpret this as a positive change that is associated with the MAPCP Demonstration.

Estimates of  $\gamma_1, \gamma_2, \dots, \gamma_s$  show whether the MAPCP Demonstration was associated with slower outcome growth and whether the change associated with the demonstration changed over time. It is important to note, however, that the estimates apply to different subgroups of demonstration beneficiaries. The interaction term  $\text{Assign}_{ijt} * I_{ij} * Q_{t=\text{dq}_1}$  in **Equation 1.1** could only ever be nonzero for beneficiaries assigned to a demonstration practice during the first quarter of the demonstration. For the purpose of estimating  $\gamma_1$ , those beneficiaries then form the intervention group. Similarly, the interaction term  $\text{Assign}_{ijt} * I_{ij} * Q_{t=\text{dq}_2}$  could only ever be nonzero for beneficiaries assigned to a demonstration practice during the first or second quarter of the demonstration. This group of beneficiaries is then the intervention group for estimating  $\gamma_2$ , etc. To summarize, estimates of the  $\gamma$  coefficients in **Equation 1.1** represent changes for each of the demonstration quarters, but are based on a changing composition of the intervention group (because of rolling entry and exit).

In addition, the D-in-D estimates for total Medicare expenditures were used to calculate the estimated “total difference” in total expenditures between beneficiaries assigned to MAPCP Demonstration practices and those assigned to comparison practices. These total differences are calculated by multiplying the D-in-D estimate in a given quarter by the number of eligible demonstration beneficiaries in that quarter. Finally, we report a cumulative D-in-D estimate, or cumulative difference, which is simply the total difference aggregated across all demonstration quarters. A positive cumulative D-in-D number for total Medicare expenditures indicates that expenditures increased faster for beneficiaries assigned to demonstration practices than for beneficiaries in the comparison group. At least in the short term (i.e., for the initial demonstration quarters considered in the analysis), this is considered evidence for a detrimental association between the MAPCP Demonstration and payment growth. Negative numbers

indicate that the demonstration was associated with lower payment growth and suggest that the MAPCP Demonstration is associated with gross cost savings.<sup>11</sup>

The linear version of the QFE model in *Equation 1.1* is less appropriate for the utilization measures, which are count variables. For these outcomes, we first estimate a negative binomial model and then use the estimated coefficients to calculate the change associated with the demonstration during each quarter of the demonstration.<sup>12</sup> Specifically, the changes were calculated as follows (Puhani, 2012):

$$\begin{aligned}\tau_1 &= \exp(\alpha_0 + \alpha_1 + \beta_{0,dq\_1} + \beta_1 + \delta X_{ij} + \lambda) * [\exp(\gamma_1) - 1], \\ \tau_2 &= \exp(\alpha_0 + \alpha_1 + \beta_{0,dq\_2} + \beta_1 + \delta X_{ij} + \lambda) * [\exp(\gamma_2) - 1], \\ &\dots \\ \tau_s &= \exp(\alpha_0 + \alpha_1 + \beta_{0,dq\_s} + \beta_1 + \delta X_{ij} + \lambda) * [\exp(\gamma_s) - 1].\end{aligned}\tag{1.2}$$

Unlike the linear version of the QFE model, *Equation 1.2* shows that the changes associated with the demonstration vary with the value of  $X_{ij}$ . In this report, we estimate  $\tau_1, \tau_2, \dots, \tau_s$  by setting  $X_{ij}$  equal to its sample mean in the intervention group. Further, because of the nonlinearity of the negative binomial specification, the coefficients  $\tau_1, \tau_2, \dots, \tau_s$  no longer have a D-in-D interpretation. Instead, they measure in each demonstration quarter, the increase or decrease in average utilization associated with the demonstration among beneficiaries assigned to MAPCP Demonstration practices.<sup>13</sup> The delta method, implemented in Stata with the command “nlcom,” was used to calculate standard errors of the estimates. The estimated changes in average utilization and standard errors were multiplied by 1,000 to express them in rates per 1,000 Medicare FFS beneficiary quarters (or, in the case of 30-day unplanned readmissions, per 1,000 Medicare FFS beneficiaries with a live discharge).

For the Second Annual Report, we also estimate two other nonlinear models: a logit model for seven binary quality of care outcomes and an ordered logit model for two access and coordination of care outcomes grouped into quintiles for the purpose of ranking.

Because of the relatively infrequent observations of these types of outcomes in quarterly claims data, these outcomes are modeled using claims for an entire year. Because of the rolling entry into the MAPCP Demonstration, however, occurring quarterly, the use of annual claims

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<sup>11</sup> Gross savings do not account for the payment of demonstration fees. Even if there are gross savings, these may be insufficient to cover the amount of fees paid out (in which case the demonstration is not budget neutral).

<sup>12</sup> For the negative binomial models, the linear combination of covariates on the right-hand side of Equation B.1—excluding the error term  $\varepsilon_{ijt}$ —is the “linear index.” The predicted outcome, conditional on the covariates, is  $\exp(\text{linear index})$ , where  $\exp(\cdot)$  is the exponential function.

<sup>13</sup> This is the more general way to define an intervention effect (see Puhani, 2012). If the QFE model is linear, this definition becomes equivalent to the D-in-D interpretation.

does not allow us to classify calendar years as occurring entirely before or after a beneficiary's assignment. In other words, if a beneficiary was attributed to a demonstration practice in July 2012, then 2012 cannot be considered as exclusively being a predemonstration or a postdemonstration observation.

For outcomes using annual claims, therefore, we grouped claims data into four-quarter intervals leading up to and following a beneficiary's assignment. For example, regardless of the calendar quarter when a beneficiary was assigned, their first "year" of posttreatment claims represents the first four quarters after assignment, the second "year" represents the fifth through eight quarters after assignment, and so forth. These "years" may or may not coincide with actual calendar years. Baseline observations are handled in the same way, with the four quarters immediately preceding the beneficiary's assignment representing the last baseline "year," the fifth to eighth quarters preceding assignment representing the second-to-last baseline "year," and so forth. For example, the first year postassignment for a beneficiary assigned to a demonstration practice in the third quarter of 2012 would contain their claims data from the third quarter of 2012 through the second quarter of 2013.

Because calendar time has been removed from the structure of the data, rolling entry is no longer a factor (though censoring is present, because some beneficiaries have been attributed longer than others and so have more "years" of post assignment data to use). A model similar to *Equation 1.1* is estimated for these annual outcomes, with year indicator variables substituted for quarterly ones. The most important difference, however, is that the  $Assign_{ijt}$  variable is dropped from the model because all beneficiaries are now assigned in the same relative time period. This makes the  $Assign_{ijt}$  variable completely colinear with the indicator for the first post treatment year, and so it could not be included in the model.

$$Y_{ijt} = \alpha_0 + \alpha_1 I_{ij} + \beta_{0,t} Y_t + \beta_1 Pilot_j + \delta X_{ij} + \gamma_1 I_{ij} * Y_{t=dy\_1} + \gamma_2 I_{ij} * Y_{t=dy\_2} + \dots + \gamma_s I_{ij} * Y_{t=dy\_s} + \varepsilon_{ijt}. \quad (1.3)$$

Similar to the nonlinear count models, we define the change of interest in the logit and ordered logit models as the percentage point change in the predicted probability of an outcome associated with the demonstration among beneficiaries assigned to MAPCP Demonstration practices. As outlined in Puhani (2012), this interpretation differs slightly from the traditional D-in-D framework. Specifically, the changes associated with the demonstration in the logit models are calculated as:

$$\begin{aligned} \tau_1 &= \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_1} + \beta_1 + \delta X_{ij} + \gamma_1) / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_1} + \beta_1 + \delta X_{ij} + \gamma_1)) \\ &\quad - \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_1} + \beta_1 + \delta X_{ij}) / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_1} + \beta_1 + \delta X_{ij})), \\ \tau_2 &= \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_2} + \beta_1 + \delta X_{ij} + \gamma_2) / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_2} + \beta_1 + \delta X_{ij} + \gamma_2)) \end{aligned}$$

$$\begin{aligned}
& - \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_2} + \beta_1 + \delta X_{ij}) / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_2} + \beta_1 + \delta X_{ij})), \\
& \dots \\
& \tau_s = \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij} + \gamma_s) / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij} + \gamma_s)) \\
& - \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij}) / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij})),
\end{aligned} \tag{1.4}$$

The changes associated with the demonstration in the ordered logit models are calculated as:

The change in the predicted probability of falling in the lowest quintile:

$$\begin{aligned}
\tau_s &= 1 / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij} + \gamma_s - K_1)) \\
& - 1 / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij} - K_1)),
\end{aligned} \tag{1.5}$$

The change in the predicted probability of falling in the highest quintile:

$$\begin{aligned}
\tau_s &= [1 - 1 / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij} + \gamma_s - K_4))] \\
& - [1 - 1 / (1 + \exp(\alpha_0 + \alpha_1 + \beta_{0,dy\_s} + \beta_1 + \delta X_{ij} - K_4))],
\end{aligned} \tag{1.6}$$

where  $K_1$  and  $K_2$  are so-called cut-off values corresponding to the 20th and 80th percentiles of the distribution of the outcome measures.

The values of the two access and coordination of care measures modeled using ordered logit demonstrated a highly skewed distribution between 0 and 1. After exploring deciles, quartiles, and quintiles of the distribution, we chose to operationalize these measures using quintiles. Doing so allowed for sufficient variation in the distribution of values for regression modeling.

## Estimation

The model in *Equation 1.1* is estimated using weighted least squares. The negative binomial, logit, and ordered logit models for the utilization, access to care, and coordination of care outcomes are estimated using weighted maximum likelihood. Standard errors of the coefficient estimates are adjusted for clustering at the practice level (Cameron & Trivedi, 2005). Construction of the estimation weights was described in *Section 1.2.3*.

## Reporting

In *Chapters 3 through 10*, for each state we tabulate the quarterly changes associated with the demonstration and their confidence intervals for the first 2 years of the MAPCP Demonstration. For expenditure outcomes, such as total Medicare expenditures, expenditures for short-stay, acute-care hospitalizations, and ER, the estimated changes are the estimates of  $\gamma_1$ ,  $\gamma_2$ ,

$\gamma_3, \gamma_4, \gamma_5, \gamma_6, \gamma_7$ , and  $\gamma_8$  from **Equation 1.1**. For utilization outcomes, the changes in the average utilization rates are estimated using **Equation 1.2**, where  $X_{ij}$  is evaluated at the sample mean in the intervention group. These estimates are multiplied by 1,000 to express them as a utilization rate per 1,000 Medicare FFS beneficiary quarters. For the seven binary quality of care outcomes, the changes in the predicted probabilities are estimated using **Equation 1.4**, and for the two access and coordination of care outcomes using ordered ranking, the changes in the predicted probabilities are estimated using **Equations 1.5 and 1.6**.

For all outcomes, we report the weighted average change across the first four quarters (Year One) of the demonstration, across the second four quarters of the demonstration (Year Two), and across all eight quarters of the first two demonstration years. The averages are calculated by weighting the quarterly changes by the number of demonstration-eligible beneficiaries in each quarter. The number of unique demonstration beneficiaries is given in the tables for each outcome and for each year. See **Appendix G** for the number of unique beneficiaries in the respective comparison groups.

To help place the magnitude of these changes into context, we also provide **Appendices E and F**. Appendix F presents decompositions of the difference-in-difference estimates, whereas Appendix E presents tables of the weighted average quarterly outcomes (nonregression adjusted) by demonstration and comparison groups.

### 1.2.7 Methods for Evaluating Budget Neutrality

In this section, we describe RTI's methodology for determining whether Medicare's participation in the state initiative is *budget neutral*. The budget neutrality analysis is limited to Medicare beneficiaries<sup>14</sup> and conducted for each state separately.<sup>15</sup> Budget neutrality is determined annually for the two MAPCP Demonstration years. In deciding whether a state initiative is budget neutral to Medicare, we focus on the change relative to comparison group PCMHs. This change isolates the differences associated with intervention PCMHs receiving payments from Medicare to manage their beneficiaries and captures other features of the state initiative implemented after CMS joined each state initiative. The reference group for this analysis is composed solely of Medicare FFS beneficiaries assigned to PCMHs in the comparison group.<sup>16</sup>

### Gross Savings

Gross savings are estimated from the regression model in **Equation 1.1 (Section 1.2.6)**. The eight  $\gamma$  coefficients ( $\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5, \gamma_6, \gamma_7, \gamma_8$ ) are used to calculate quarter-specific estimates of average gross savings per demonstration beneficiary in that quarter relative to beneficiaries assigned to the PCMH comparison group. The weighted sum of the eight quarterly  $\gamma$  coefficients,

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<sup>14</sup> Savings possibly are more or less across all demonstration beneficiaries, including commercial and Medicaid beneficiaries, but our focus will be exclusively on Medicare beneficiaries.

<sup>15</sup> In Pennsylvania, budget neutrality is estimated separately for the northeast and southeast regions.

<sup>16</sup> In Minnesota, because of the absence of a PCMH comparison group, budget neutrality is estimated relative to non-PCMH practices.

weighted by the respective number of demonstration beneficiaries in each quarter, gives an estimate of total gross savings, or potentially “negative” savings, associated with the demonstration to date. A **negative** estimate of  $\gamma$  indicates that the MAPCP Demonstration was associated with a reduction in the Medicare Part A and B expenditures trend (relative to the PCMH comparison group), which translates to **positive** gross savings. Conversely, a **positive** estimate of  $\gamma$  indicates that the MAPCP Demonstration was associated with an increase in the Medicare Part A and B expenditures trend (relative to the comparison group), which translates to **negative** gross savings. Gross savings, then, are calculated simply by switching the sign of the eight quarterly  $\gamma$  coefficients.

### MAPCP Demonstration Payments

In the MAPCP Demonstration, CMS is making monthly MAPCP Demonstration payments to PCMHs for assigned demonstration beneficiaries. In some states, CMS also is making MAPCP Demonstration payments to CHTs to support the practices. Each state determined the dollar amounts of the payments to be made to practices and these other entities. Detailed information on MAPCP Demonstration payments is found in **Tables 2-4** and **2-5**. The determination of budget neutrality is inclusive of all payments for PCMH services made by CMS to MAPCP Demonstration practices, CHTs, and any other entities for beneficiaries with at least 3 months of eligibility. This 3-month eligibility criterion is used to be consistent with the beneficiaries included in the regression models. Monthly MAPCP Demonstration payments are aggregated to the quarter level from Medicare claims data containing the official record of payments.

### Net Savings

Budget neutrality, or *net* savings, for a given period ( $NS_{\text{period}}$ ), is defined in **Equation 1.7** as the non-negative difference between *gross* savings ( $GS_{\text{period}}$ ), minus total Medicare MAPCP Demonstration payments ( $TF_{\text{period}}$ ). In the Second Annual Report, net savings is calculated by summing across the eight quarterly estimates of gross savings and subtracting total fees to date.

$$NS_{\text{SAR}} = GS_{\text{SAR}} - TF_{\text{SAR}} = \sum_{\text{qtr}}^8 GS_{\text{qtr}} - \sum_{\text{qtr}}^8 TF_{\text{qtr}} \quad (1.7)$$

Net savings are negative if the MAPCP Demonstration payments exceed gross savings, or if gross savings themselves are negative (i.e., the demonstration is associated with increased Medicare Part A and B expenditures). If net savings are non-negative, the MAPCP Demonstration is considered to be budget neutral.

### Statistical Test of Budget Neutrality

In the MAPCP Demonstration, states and PCMHs are not at financial risk of having to return demonstration payments if payments exceed gross savings estimates. Nevertheless, the regression method does allow statistical testing of hypotheses about changes associated with the demonstration and the presence of gross savings. In this report, we test gross savings, using a two-sided 90 percent confidence interval. Total gross savings are calculated by weighting the eight quarterly estimates of per beneficiary gross savings by the number of eligible beneficiaries assigned to demonstration practices in each quarter. For the demonstration to be budget neutral in a statistical sense, the lower limit of the confidence interval for total gross savings must exceed the total amount of MAPCP Demonstration payments. This test answers the question: Did gross savings more than cover the total MAPCP Demonstration payments?

## CHAPTER 2 CROSS-STATE FINDINGS

### 2.1 Initiative Features

This section of the Second Annual Report presents a snapshot of key features of the eight state initiatives and identifies the differences and commonalities among them. Differences in characteristics of state initiatives—such as the length of time each was in operation, the requirements that practices had to meet, the extent of community-based resources, and structure of their payment system—are of critical importance to understanding the overall changes observed during the demonstration. This section therefore offers a context for understanding the findings from the overall evaluation.

#### 2.1.1 State Environment

All state initiatives have a history of collaboration. These previous collaboratives, however, differ in their primary partners. Seven states (Maine, Minnesota, Michigan, Pennsylvania, New York, Rhode Island, and Vermont) had multiyear histories of broad-based collaborative efforts with payers, providers, and other stakeholders before applying to participate in the MAPCP Demonstration. Michigan used the demonstration as an opportunity to draw together separate efforts to create a new collaborative, while the other states continued their existing collaboratives. North Carolina had a long history of collaboration to advance care coordination between the state and providers for Medicaid beneficiaries and, at the time of application, expanded that partnership to include commercial payers.

All state initiatives leveraged funding from sources other than participating payers to support portions of their patient-centered medical home (PCMH) initiative or other programs complementary to their PCMH initiative. For example, Maine and New York obtained funding for portions of their PCMH initiatives from private foundations, while Vermont used the proceeds from a tax on medical claims to support its health information exchange (HIE) and clinical registry. All state initiatives also are participating in relevant federal initiatives and continue to pursue new opportunities to leverage federal resources to improve the health care delivery system. **Table 2-1** details these federal initiatives for each state.

More states had stable political environments in the second year of the demonstration compared to the first year. In the first year, six states had shifts in political leadership. Conversely, in the second year, political leadership changed in only one state, while seven states (Maine, Michigan, Minnesota, New York, Pennsylvania, Rhode Island, and Vermont) reported stable political environments. North Carolina's political leadership changed in 2013 when a new governor took office who was from a different party affiliation than his predecessor. This change brought additional changes in leadership at the Department of Health and Human Services, including a new secretary of health and Medicaid medical director.

In the second year of the demonstration, six states (Maine, Minnesota, New York, North Carolina, Pennsylvania, and Vermont) faced budget shortfalls, as compared to all eight states in the first year. Stakeholders in Maine reported that this shortfall had affected the demonstration. Maine defunded all Dirigo Health Agency functions, except the Maine Quality Forum, at the end

of 2013. This Agency had funded many state initiative activities, many of which were transferred to other organizations or agencies.<sup>1</sup>

**Table 2-1**  
**MAPCP Demonstration state participation in federal initiatives to improve delivery of care as of December 31, 2013**

<b>Initiative<sup>1</sup></b>	<b>New York</b>	<b>Rhode Island</b>	<b>Vermont</b>	<b>North Carolina</b>	<b>Minnesota</b>	<b>Maine</b>	<b>Michigan</b>	<b>Pennsylvania</b>
SIM Initiative Round 1 Grantee	Yes, model pre-test	Yes, model design	Yes, model test	No	Yes, model test	Yes, model test	Yes, model design	Yes, model design
Financial Alignment Initiative	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Health Homes (§2703)	Yes	Yes	Yes	Yes	No	Yes	No	No
Medicare 646	No	No	No	Yes	Yes	No	No	No

NOTES:

<sup>1</sup> For more information about these federal initiatives, please see the following:

- SIM Initiative: <http://innovation.cms.gov/initiatives/state-innovations/>
- Financial Alignment Initiative: <http://innovation.cms.gov/initiatives/Financial-Alignment/>
- Health Homes (§2703): <http://www.medicare.gov/Medicare-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Supports/Integrating-Care/Health-Homes/Health-Homes.html>
- Medicare 646: <http://innovation.cms.gov/initiatives/Medicare-Health-Care-Quality/>

MAPCP = Multi-Payer Advanced Primary Care Practice; SIM = State Innovation Models.

### **2.1.2 Demonstration Scope**

At the end of the second year of the MAPCP Demonstration in each state (June 30, 2013, for New York, Rhode Island, and Vermont; September 30, 2013, for North Carolina and Minnesota; December 31, 2013, for Maine, Michigan, and Pennsylvania), the states reported a total of 2,847,164 participants in the MAPCP Demonstration. At the end of the second year of the demonstration, CMS had attributed 595,215 Medicare fee-for-service (FFS) beneficiaries to participating practices (**Table 2-2**). This was an increase of 621,627 total participants and 187,208 Medicare beneficiaries since the end of the first year of the demonstration in each state. The size of each state initiative continued to vary widely. Michigan's PCMH initiative had the most participants (1,151,518 participants, including 267,568 Medicare FFS beneficiaries); Rhode Island had the fewest (53,946 participants, including 10,658 Medicare FFS beneficiaries).

There were similar variations in the numbers of participating practices and providers; Michigan always had the largest numbers, and Rhode Island always the smallest. North Carolina reported the fewest number of payers (four), while New York reported the most payers (nine).

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<sup>1</sup> The Maine Quality Forum was the part of the Dirigo Health Agency directly related to the demonstration and is one of the three conveners of the Maine PCMH Pilot; the Dirigo Health Agency provided some additional funding to Maine's PCMH Pilot that was no longer be available after 2013.

States reported on community health teams or similar shared support teams; Maine, Michigan, New York, North Carolina, and Vermont reported having shared support teams in place.

Across the eight states, a total of 4,052,346 participants, including 783,621 Medicare beneficiaries, were estimated to participate in the state initiatives according to the states' applications. As a whole, the initiatives met 70 percent of that all-payer projection and 76 percent of the Medicare-only projection as of the end of the second demonstration year in each state. Actual participation was less than projected for several reasons. These included the number of Medicare beneficiaries eligible for the demonstration was overestimated; fewer commercial payers participated than expected; patient attribution and assignment algorithms changed; and practices either left or failed to meet the qualifications for participation in the state initiative.

**Table 2-2**  
**MAPCP Demonstration scope as of the end of Year Two in each state**

State	Geographic scope	Participants		Practices <sup>4</sup>	Providers <sup>4</sup>	Payers (including Medicare) <sup>2</sup>
		All-payer <sup>2</sup>	Medicare FFS beneficiaries <sup>3</sup>			
New York	Regional (4 counties)	100,809	24,771	37	189	9
Rhode Island	Statewide	53,946	10,658	18	99	5
Vermont	Statewide	262,107	65,896	112	585	5
North Carolina	Regional (7 counties)	83,301	30,842	42	150	4
Minnesota <sup>1</sup>	Statewide	904,169	106,635	136	1,704	—
Maine	Statewide	125,232	52,485	71	482	5
Michigan	Statewide	1,151,518	267,568	314	1,618	5
Pennsylvania	Regional (2 regions)	166,082	36,360	55	386	7
Total	—	2,847,164	595,215	785	5,213	—

NOTES:

- The number of all-payer participants is the point-in-time number reported by the states as of the end of the state's demonstration year.
- Demonstration practices include only those practices with attributed Medicare FFS beneficiaries, and participating providers are providers that are associated with those practices.
- The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries that had ever been assigned to participating demonstration practices for at least 3 months.

<sup>1</sup> Minnesota does not report individual commercial insurance plan participation in its quarterly reports to CMS.

ARC = Actuarial Research Corporation; CMS = Centers for Medicare & Medicaid Services; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; SIM = State Innovation Models.

SOURCES: <sup>2</sup> Quarterly state progress reports to CMS; <sup>3</sup> ARC MAPCP Demonstration Beneficiary Assignment File;

<sup>4</sup> ARC MAPCP Demonstration Provider File.

Two states reported that payers joined or left the demonstration in 2013. In Pennsylvania, a major commercial payer withdrew from the initiative in the northeast region as of December 31, 2012, and two payers in the southeast region withdrew from the initiative in March 2013 and December 2013. Michigan, on the other hand, added Priority Health in July 2013. This addition brought more than 100,000 new participants into Michigan's initiative. Finally, while New York

did not report any changes in payers in 2013, the state reported efforts to secure the participation of another health plan.

### **2.1.3 Practice Expectations**

As reported in the first year of the demonstration, all state initiatives established standards for practices to meet for participation in the demonstration and receipt of payment (qualification standards). They all also established standards and performance requirements for practices to meet to continue in the state initiative. Together, these expectations assured payers that practices were undertaking the activities necessary to transform their practices and justify the enhanced payment. This section examines four key components of practice expectations. States reported few changes to these standards in the second year of the demonstration, and changes that were reported most often were refinements of the requirements established in the first year.

PCMH recognition standards were the core requirements that practices had to meet to join the MAPCP Demonstration. All eight state initiatives established such standards. No state changed the base of their standards in the second year of the demonstration. Six state initiatives (Maine, New York, North Carolina, Pennsylvania, Rhode Island, and Vermont) based their standards largely on the National Committee for Quality Assurance (NCQA) PPC® PCMH™ recognition standards, but these states also required practices to meet additional state-specific criteria. For example, in addition to achieving NCQA recognition, North Carolina required practices to be accepted into Blue Cross Blue Shield of North Carolina (BCBSNC) Blue Quality Physician Program (BQPP), while Maine required its practices to meet its initiative's 10 Core Expectations.

Two states (Michigan and Minnesota) did not require practices to achieve NCQA recognition as a condition of participation. Michigan allowed practices to choose whether they wanted to seek recognition from NCQA or through the Blue Cross Blue Shield (BCBS) of Michigan Physician Group Incentive Program (PGIP). Minnesota developed its own state Health Care Home standards and administered its own process for practices seeking recognition since July 2010.

While the expectations established by all eight state initiatives varied, states were likely to establish requirements addressing three aspects of performance: practice transformation, quality improvement, and data reporting. Practice expectations are summarized in greater depth in **Table 2-3** in **Section 2.4.1**.

- Four states (Maine, Michigan, Pennsylvania, and Rhode Island) required practices to participate in activities designed to help them transform their practices. These efforts included learning collaboratives, practice coaches, webinars, and phone calls.
- Four states (Minnesota, New York, North Carolina, and Vermont) required practices to take specific actions to improve quality. For example, Vermont required practices to establish a quality improvement team and work with the state quality improvement program. North Carolina practices were required to work with local networks and

Area Health Education Centers (AHECs) toward quality improvement goals. New York required practices to develop data reporting capabilities.

- Seven states (Maine, Michigan, Minnesota, New York, Pennsylvania, Rhode Island, and Vermont) expected practices to report information to the state initiatives. Most commonly, practices had to report on state-specified clinical, quality, or performance-based metrics.

In 2013, three states (North Carolina, Pennsylvania, and Rhode Island) made modifications to the requirements for practices to meet as a condition of participation in the state's medical home initiative. In North Carolina, BCBSNC removed some of the BQPP requirements for practices affiliated with large hospital systems, independent practice associations, or academic medical centers because they were precluded from receiving additional reimbursement after becoming BQPP-recognized. These practices still were required to meet BQPP requirements on cultural competency training and motivational interviewing education. Pennsylvania updated its Practice Performance Assessment Framework, which measured clinical performance improvement, transformation, and engagement, to align the clinical performance measures more closely with measures used to calculate shared savings. Lastly, Rhode Island slightly altered its expectations for participating practices when it implemented its new common contract, termed the Developmental Contract, in April 2013.

#### **2.1.4 Support to Practices**

The eight state initiatives implemented varying payment methodologies to compensate practices for the initial and ongoing costs of functioning as a PCMH and meeting practice transformation requirements. Payment approaches range from flat per member per month (PMPM) payments to payments based on performance on quality and/or cost, or some combination of the two. These payments allowed practices to invest in changes designed to transform the delivery of care to their patients.

Three states changed their payment model in 2013. Rhode Island changed its reimbursement methodology when it implemented its Developmental Contract. Under the new contract, practices continued to receive a base PMPM payment of \$5.50 and were eligible for additional PMPM performance payments of variable amounts based on meeting performance targets across the 4 contract years. In Maine, MaineCare (Medicaid) altered its payment methodology in January 2013 to align with the payment methodology outlined in its Section 2703 Health Homes State Plan Amendment. Practices participating in both Maine's PCMH Pilot and Health Homes Initiative received PMPM payments of \$12.00. In 2013, New York added a pay-for-performance component to its payment methodology. Practices began contributing \$0.50 of their \$7.00 PMPM to a pay-for-performance pool; these pooled funds will be redistributed to practices as incentive payments. The amount paid to each practice will vary based on its performance in multiple areas, including patient satisfaction.<sup>2</sup> New York joined Rhode Island as

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<sup>2</sup> As of December 31, 2013, New York had not yet distributed performance payments to practices.

the only other state initiative participating in the MAPCP Demonstration to tie performance payments to patient satisfaction.

As in the first year of the demonstration, five state initiatives (Maine, Michigan, New York, North Carolina, and Vermont) also paid shared support teams that supported participating practices and patients. Although these organizations varied in structure, staffing, and payment, they all were intended to augment the care coordination provided by practices and improve the links between primary care practices and community services. In some states these organizations also were intended to support other activities. For example, in Michigan and North Carolina, these organizations supported practices in changing how they delivered care and conducted quality improvement activities. Depending on the nature of their full responsibilities in supporting practices and patients, these organizations also employed dietitians, pharmacists, social workers, and others in addition to care managers.

In addition to providing financial support to practices and shared support teams, every state initiative offered technical assistance to practices, including learning collaboratives, in-person meetings, practice coaching, and distance learning, such as webinars or conference calls.

All state initiatives also continued to deploy various kinds of systems to provide data to practices. Some states refined these systems in the second year of the demonstration. For example, in Michigan, the Michigan Data Collaborative added commercial data to its provider dashboards, which allowed provider organizations (POs) to assess their relative performance against other POs and performance benchmarks. They also offered the ability to drill down to the individual provider and patient level to help improve performance. New York contracted with Treo Solutions to provide feedback reports aggregating utilization and expenditure data at the pod, practice, and provider levels. Through the MAPCP Demonstration, CMS also supported a Web portal for practices to receive practice feedback reports and Medicare beneficiary utilization files, which had variable use among practices.

## **2.2 Implementation**

This section uses primary data gathered from site visits to the eight state initiatives participating in the MAPCP Demonstration in the fall of 2013, synthesizing key themes and findings from the implementation experience of state officials, payers, and providers across the states. It highlights similarities and differences among the states and includes common lessons learned in the second year of the demonstration.

### **2.2.1 Major Changes During the Second Year of the Demonstration**

In 2013, the biggest changes to the structure of the program were changes in scope. All state initiatives experienced changes in scope: gaining or losing payers, providers, practices, and/or beneficiaries. For example, Maine added practices and providers, Michigan added a payer, but reported fewer practices, and Pennsylvania lost two payers.

The biggest changes in the second year of the demonstration were not changes to the structure of the state initiatives, but rather the improved functioning of the initiatives as they moved from implementation to operation. This transition was particularly clear in the area of care coordination. Stakeholders in all states reported improvements in care coordination.

Minnesota practices reported using care managers to perform more sophisticated tasks, such as creating care plans and conducting medication reconciliation with pharmacists. Michigan initiative staff reported that more than 400 care managers were trained and embedded in practices in the second year. Many Pennsylvania practices reported adding or strengthening the role of care managers and having care managers work at the top of their licenses. New York stakeholders reported a shift away from disease-specific care management, focusing instead on care management for the whole patient. Nurse managers in North Carolina reported receiving more direct patient referrals from practices and noted improvement in their own abilities to connect patients with community resources.

All six of the states that featured shared support teams reported improvement in the connection between providers and those teams. For example, Vermont stakeholders reported greater integration of community health teams into practices and local communities, and stakeholders in Maine reported that the role of the community care teams was more clearly defined and expanded over the year. North Carolina care networks increased the use of clinical pharmacists to manage transitional care.

Finally, all state initiatives strove to improve their programs based on their early implementation experience. Most initiatives modified their technical assistance to address issues that arose in the first year. Pennsylvania updated its practice performance assessment framework tool to align the quality measures used more closely with those used in calculating shared savings. Pennsylvania also improved its practice portal to allow for smoother data entry and more timely feedback. Five states identified new or refined areas of focus in response to community or program needs. Vermont responded to a shortage of substance abuse and mental health resources by embedding a behavioral health counselor into one practice's care team; the practice reported that this addition was a success. Maine and Rhode Island also worked to address patients' behavioral health needs more effectively. Michigan, New York, and North Carolina began or strengthened palliative care efforts in response to program needs. In North Carolina, a palliative care effort arose out of a care network's need for palliative care to help assisted living residents avoid unwanted hospitalizations.

### **2.2.2 Major Implementation Issues During the Second Year**

All eight states reported challenges with health information technology (health IT) and the quality and timeliness of data, which was associated with challenges with patient attribution and payment. Stakeholders also reported concerns about sustaining momentum.

A Vermont state official reported that health IT infrastructure consumed a lot of time and money, but still fell short of expectations: claims and clinical data were integrated, and a query-based provider portal had not launched as hoped. Stakeholders reported that Vermont's statewide clinical registry, DocSite, contained unreliable data, due in part to entry errors, and its "consent to view" privacy policy made the system onerous to use. Rhode Island reported that patients were slow to participate in CurrentCare, the state's HIE, due in part to its "opt-in" patient enrollment model. Providers, in turn, were reluctant to use the system because it did not include a critical mass of patients. Stakeholders in Maine, Minnesota, and New York reported ongoing challenges with electronic health record (EHR) interoperability and worked to ensure that providers used EHRs more effectively. Michigan formed a new partnership with the Michigan

Health Information Network in an effort to improve the data flowing to providers. Minnesota's struggle to recruit and retain state IT staff was associated with a slowdown in the health care home certification process, according to one state official.

Five states reported specific ongoing payment challenges stemming from incomplete or inaccurate data. In Maine, for example, implementation of the attestation and payment system associated with MaineCare's 2013 addition of health homes was challenging at first. The state implementation team reported that MaineCare's initial delay in loading patient lists to the new attestation portal meant that no payments went to community care teams in the first 3 months of 2013. In Year Two, North Carolina Medicaid transferred to both a new Medicaid management information system (MMIS) and data warehouse, which led to Medicaid payment delays and data lags. North Carolina stakeholders reported that concerns about delayed payments distracted practices from quality improvement activities.

Michigan practices and physician organizations welcomed an all-payer patient list that replaced individual lists from each payer. Practices and physician organizations, however, reported frustration with the timeliness and accuracy of the all-payer patient list and continued having difficulty billing the G-codes for care management services. Likewise, many Minnesota practices found their initiative's billing process so challenging that they did not submit claims for monthly care coordination payments. New York's methodology for distributing new pay-for-performance funds took longer than expected to finalize, due in part to concerns about the quality and timeliness of the data.

Finally, stakeholders in most states expressed concern about sustaining momentum among payers and providers. Several states reported difficulty in maintaining or expanding payer participation, especially the self-insured. Pennsylvania reported the loss of two payers and the planned withdrawal of another, while New York was unsuccessful in drawing a new payer into the initiative. On the other hand, Michigan added a payer. Sustaining momentum among providers and practices also was an issue, with stakeholders in most states concerned about practices' ability to afford to sustain their practice enhancements. One stakeholder in Maine reported that chronic underfunding of primary care left practices struggling to transform care even with the additional funds from the MAPCP Demonstration. Others questioned the initiative's continued financial viability after the end of the demonstration (and Medicare's withdrawal as a payer). Stakeholders in Pennsylvania and Rhode Island feared that a reduction in demonstration funds to practices might jeopardize their ability to sustain transformation efforts. In New York, some smaller practices reported fatigue with the ongoing demands of meeting initiative standards while providing patient care.

### **2.2.3 External and Contextual Factors Affecting Implementation**

#### **Political Climate**

While political environments in some states were dynamic, political support for the program remained stable in Maine, Michigan, Minnesota, New York, Rhode Island, and Vermont. On the other hand, Pennsylvania's persistent payer attrition in 2013 was associated partly with the 2011 change in governor, as participation by the state's Medicaid managed care organizations became voluntary under the new administration. Most North Carolina state

officials and payers reported that turnover created by their change in administration was a distraction, but it did not affect the day-to-day operation of the initiative.

### **Impact of Other Health Reform Initiatives**

All eight states participating in the MAPCP Demonstration reported other health reform initiatives operating alongside their initiatives. Most stakeholders generally saw the demonstration as complementing and supporting the other reform initiatives, although there was concern in some states that other initiatives would supplant or dilute the effect of the MAPCP Demonstration, or lead to “innovation fatigue.” The most common health reform initiatives underway in participating states were the State Innovation Model (SIM) awards and the development of accountable care organizations (ACOs) for public and private payers. Michigan noted that SIM could require modifications to its initiative’s model, including a possible expansion of the ways in which practices were designated as medical homes. One Minnesota state official reported that some clinics involved in ACOs hesitated to take up-front care coordination payments because it made it more difficult for them to qualify for ACO shared savings payments.

### **Market Factors**

Regional, state, and national health care market factors affected the state initiatives. In North Carolina, hospitals acquired primary care practices and drove the consolidation of providers. Mergers and acquisitions affected participation in the demonstration if the new owners did not wish to participate, or if the new entity did not have the PCMH recognition required to participate. Hospitals in Maine, New York, North Carolina, and Rhode Island invested more in care management to reduce readmissions, which may have duplicated some of the care management provided through the demonstration. One Michigan payer reported that participation in a multi-payer initiative could improve their competitive advantage over nonparticipating payers. In New York, the initiative affected the market, with the region’s primary care base stabilizing in part due to the resources provided through the initiative.

#### **2.2.4 Lessons Learned**

The MAPCP Demonstration benefitted from strong support by participants, with most stakeholders reporting that their state had made significant progress and improved programs in the second year. Strong leadership and relationship building were key to growth in the state initiatives. We observed that a strong leadership team was essential to uniting key stakeholders successfully around a common vision, as in Maine and New York, for example. Pennsylvania was the only state that reported significant erosion of support, with payer attrition shrinking the scope of the initiative and damaging the sense of cohesion among stakeholders.

Having the health IT infrastructure in place to share timely and meaningful data was critically important for program implementation; building this infrastructure during or after the launch of an initiative took time and resources away from improving patient care. Stakeholders in Michigan believed that consistency in data format across payers would have eased program implementation, and stakeholders in New York noted the importance of payer-level infrastructure as well.

Finally, a common lesson in all states was the need for ample time and resources to bring about practice transformation, including adequate resources for program administration and

oversight. Across states and stakeholder groups, many interviewees believed that 3 years was not enough time for the MAPCP Demonstration to show positive results, particularly in states where practices were still achieving medical home recognition during the first 2 years of the demonstration. It was also clear in the second year that transformation was never truly finished, but instead required constant attention and effort from payers, providers, and other stakeholders.

### **2.3 MAPCP Demonstration Web Portal and Quarterly Data Reports and Files**

RTI provided participating MAPCP Demonstration practices in five states (Maine, New York, Pennsylvania, Rhode Island, and Vermont) with three sets of reports and files quarterly through the RTI-managed secure Web portal. These were practice-level feedback reports, beneficiary utilization files, and beneficiary assignment files. Practice-level feedback reports showed summary-level information on key expenditures, utilization, and quality of care for practices for the most current reporting quarter, as well as for the eight baseline or predemonstration quarters (for trending information). The feedback reports detailed changes over time in key measures and benchmarking to other participating practices within the same state. The goal of the feedback reports was to provide participating MAPCP Demonstration practices with timely interim feedback on their performance on key claims-based measures likely to be useful to and usable by practices for quality improvement purposes. Beneficiary utilization files provided practices with beneficiary-level information on patient severity (using the Hierarchical Condition Category [HCC] score), disease-specific quality of care measures, and utilization information. Beneficiary assignment files provided practices with the names of beneficiaries assigned to them each quarter as well as some demographic information (e.g., date of birth, address) on each beneficiary.

A secure Web portal was developed to distribute these reports and files to the practices. Practice-, organization-, and state-level users with verified credentials were able to log on to the Web portal and retrieve information on the Medicare FFS patients assigned to them. Users began getting credentials to use the portal in April 2012. Practices in five of the eight participating states (Maine, New York, Pennsylvania, Rhode Island, and Vermont) had access to the Web portal. Two states (North Carolina and Michigan) distributed similar information to practices through their own data systems, so they did not use the demonstration Web portal. Minnesota also did not use the Web portal because they did not use a process for assigning Medicare beneficiaries to practices, as was done in the other states.

States had primary responsibility for encouraging organization (e.g., community health teams [CHTs], community care teams [CCTs], and, in New York, Pods) and practice staff to access the files and providing training on using the portal and information in the files. To augment state efforts, RTI and CMS staff conducted webinars to educate users about the Web portal and files. These webinars were posted on the portal for users to access at their convenience. Technical user guides also were available on the portal, providing instructions on how to access the portal and read and interpret information in the reports and files, as well as details on the measures contained in the reports and files and how they were analyzed or calculated.

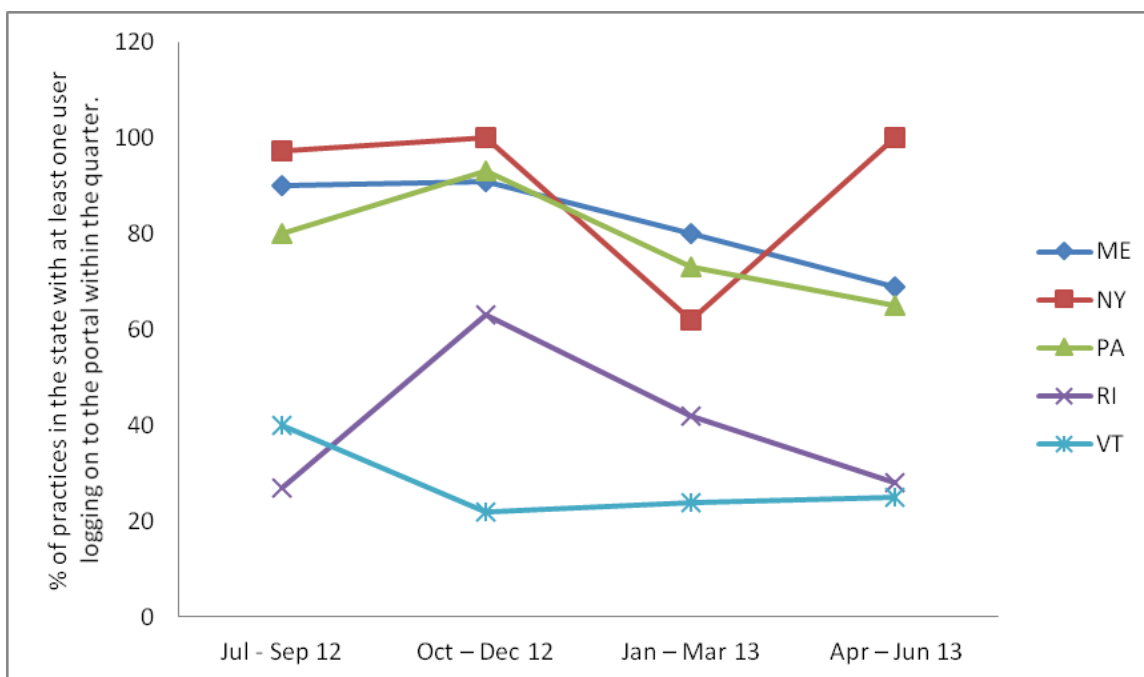
Feedback from the states and practices indicated that the beneficiary-level utilization data were the most useful because the data could be used for care management purposes. The practice

feedback reports were of less interest to the practices, although their utility perhaps increased as more experience was gained with the demonstration and as more data accrued.

### 2.3.1 Portal Users and Usage

As files and reports were added to the portal at least once quarterly, it was expected that every practice had at least one user quarterly logging on to the portal to view and download any new files. There was wide variation across states, however, in this usage. Web portal usage was relatively low and tapered off over time. As **Figure 2-1** shows, in the July through September 2012 quarter, Maine, New York, and Pennsylvania had the largest percentage of their practices with at least one user accessing the Web portal (between 80 and 100 percent). The percentage of practices with at least one user accessing the portal in Maine and Pennsylvania declined steadily since the fourth quarter of 2012, whereas the percent in New York declined slightly in the January through March 2013 quarter, but returned to 100 percent by the April through June 2013 quarter. Usage in New York was always relatively high, because the state limited portal access to the handful of Pod administrators (rather than practice-level staff), who logged on to the portal to distribute the reports to practices in their Pods. The percentage of practices that had at least one user access the portal in Rhode Island decreased steadily since October 2012, from 63 percent during the October through December 2012 quarter to 28 percent during the April through June 2013 quarter. In Vermont, the percentage of practices having at least one user access the Web portal remained low (decreasing from 40 percent in the July through September 2012 quarter and remaining at about 25 percent).

**Figure 2-1**  
Percent of practices logging on to the Web portal at least once within the quarter:  
July 2012 through June 2013



NOTE: North Carolina, Michigan, and Minnesota do not have users at the practice level and therefore are excluded from the figure.

CMS and RTI staff worked to increase usage numbers by explaining the value of the data available on the Web portal, making adjustments to increase the value of the files and reports, and encouraging state initiative staff to reach out to their practices to encourage use of the portal. CMS provided each of the five states with a monthly file showing Web portal log-in activity to help states monitor usage and reach out to practices and organizations not accessing the portal regularly.

### **2.3.2 Technical Assistance**

RTI provided ongoing technical assistance to users. In addition to the technical user guides and educational webinars, RTI had a toll-free phone number for users to call and an e-mail inbox for users to submit questions and comments and receive technical assistance. The largest issues initially encountered included reconciling incorrect e-mail addresses and other contact information for user access, enabling users to download the first set of files posted to the Web portal successfully, and having trouble as primary portal contacts added additional users. During the second demonstration year, most of the technical challenges to users were resolved and the number of technical assistance requests from users decreased dramatically.

### **2.3.3 Feedback from Practices**

During the second site visits conducted in 2013, we asked interviewees about their experiences with the practice feedback reports, beneficiary utilization files, and the portal. As during the first site visits, states still had questions about the types of staff best suited to access and use the beneficiary-level files and the practice feedback reports. States believed that different people benefitted from different sections of the reports. For example, one type of staff might be better suited to receive the beneficiary-level data on hospitalizations, while another type of staff might be better suited to receive data on gaps in quality of care. States were still navigating the reports and making determinations about who should receive them so that their usefulness was maximized. In general, respondents who were familiar with or had viewed the reports from RTI agreed that the beneficiary utilization files were more useful because they were more actionable (and had more recent data) than the practice feedback reports.

Respondents in several states reported that they viewed RTI's feedback reports more positively than reports from payers and saw them as a supplemental resource to their overall portfolio of both patient-level and practice-level data used for monitoring quality performance. Compared to the 2012 site visit, practices reported reviewing aggregated data more regularly. One respondent explained how health IT staff compared and used the utilization files to see changes in risk levels or to identify high-risk patients in need of care management services.

On the other hand, some practices felt that the reports were too long to be useful, or that they had less accurate clinical information than the practices had themselves. These practices instead preferred to use their EHR system to identify high-risk patients. Some respondents also reported that they generally did not like to log onto a separate system to look at performance reports and to get separate reports from individual payers. They would have found the reports more useful if they were able to integrate them into their daily workflow and systems. Unfortunately, the second round of site visits confirmed what the Web portal log-in statistics showed—that, all-in-all, relatively few practice-level staff knew about these reports or used them for any type of care management or quality improvement activities.

### 2.3.4 Web Portal Lessons Learned

Throughout the development of the Web portal and reporting tools for MAPCP Demonstration participants in Year One, we learned that obtaining accurate contact information was crucial. This issue was resolved, for the most part, in the second year of the demonstration. The additional lesson learned during Year Two was that many of the practices really valued these reports (in particular, the beneficiary reports) and looked forward to receiving them and using them each quarter, once they understood how to access the portal and grant access to others within the practice. The technical challenges experienced during the first year were no longer evident, for the most part, and portal access was running smoothly.

## 2.4 Practice Transformation

Across the eight MAPCP Demonstration states, practices generally viewed their adopted medical home model quite positively and felt it helped them to improve the quality of care delivered to patients. In Year Two of the demonstration, half of the states did not require practices formally to meet additional PCMH requirements, yet practices across all states increased their capacity to work with this model by making refinements and improvements to their services, such as focusing more on care transitions and using more advanced features of their EHR. The aspect of the model clearly most valuable to practices was the addition of care managers or care coordinators to their practice, since it allowed providers to shift work, while also increasing the degree of care management and follow-up provided to their highest-need patients. A few states suggested that more orientation or training for the care manager/coordinator role would have been helpful, both for these employees and the practices they supported.

Interviewees usually spoke very positively about the overall MAPCP Demonstration, but they expressed disappointment with the payment amounts provided under the demonstration. They also expressed outright frustration with billing logistics, technical difficulties, and payment methodologies that resulted in some practices in four states not receiving the monthly demonstration payments they had expected (described in *Section 2.4.3, Payment Supports*).

### 2.4.1 Changes Practices Made During Year Two

#### PCMH Recognition and Practice Transformation

In addition to the formal PCMH practice certification requirements that practices had to meet to enter the MAPCP Demonstration in Year One, half of the demonstration states also required participating practices to meet additional PCMH criteria in Year Two; these requirements are summarized in *Table 2-3* below.

Although half of the demonstration states (New York, Vermont, Maine, and Pennsylvania) did not require practices formally to meet any additional PCMH recognition requirements in Year Two (see *Table 2-3*), practices in all eight states actively refined and increased their medical home capabilities. Practices often focused on the role of the new care coordinators. They clarified or changed care coordinators' responsibilities or split them into two roles (e.g., a "moderate" and "complex" care manager); changed criteria used to identify patients needing care management services (e.g., moving away from targeting all diabetics and instead asking physicians to identify patients most in need, regardless of their diagnosis), or had care coordinators focus more on specific tasks, such as managing patients' care transitions out of the hospital and performing medication reconciliations.

**Table 2-3**  
**PCMH recognition requirements for practices participating in MAPCP Demonstration**

State	Initial requirements			Subsequent requirements
	PCMH standards	Minimum score	Care processes emphasized (e.g., state-specific mandatory criteria not required in NCQA)	
New York	NCQA	Level 2 + state-specific mandatory criteria (within 12–18 months)	<ul style="list-style-type: none"> <li>Practices have to:               <ul style="list-style-type: none"> <li>Use e-prescribing</li> <li>Participate in a disease registry</li> <li>Develop data reporting capabilities</li> <li>Meet expanded access requirements, including 24/7 telephonic access</li> <li>Offer same-day scheduling for urgent care</li> </ul> </li> <li>P4P incentives starting in 2013, based on: Member satisfaction, utilization (admissions, preventable ER visits, readmissions), development of a practice improvement plan</li> </ul>	Recertify as an NCQA Level 2 PCMH within 3 years, and employ an EHR that meets MU requirements.
Rhode Island	NCQA	Level 1 + state-specific “must-pass” NCQA elements (within 6 months)	<ul style="list-style-type: none"> <li>Practices have to:               <ul style="list-style-type: none"> <li>Employ an EHR that meets Stage 1 MU standards</li> <li>Hire and train a nurse care manager</li> <li>Participate in training and reporting activities, including learning collaboratives</li> <li>Implement after-hours care protocol within 6 months</li> <li>Comply with best practices for care transitions</li> </ul> </li> <li>Base payment in 1st year; payment tied to reporting measures in 2nd year; payment tied to performance on measures in 3rd and 4th years for quality, patient satisfaction, and utilization.</li> </ul>	In 2nd year, attain NCQA Level 2 PCMH, maintain prior requirements, and establish compacts with at least 4 specialists; in 3rd and 4th years, attain and maintain NCQA Level 3 PCMH and maintain prior year requirements
Vermont	NCQA	Level 1 + state-specific mandatory criteria	<ul style="list-style-type: none"> <li>Practices have to:               <ul style="list-style-type: none"> <li>Designate a quality improvement team that meets at least monthly and works with the state quality improvement program, Expansion and Quality Improvement Program</li> <li>Enter into an agreement with the local community health team to integrate their services into the practice</li> <li>Enter into agreements with the state’s HIE/HITECH Regional Extension Center and demonstrate progress towards being able to communicate with centralized state-endorsed clinical registry</li> </ul> </li> </ul>	Recertify as an NCQA Level 1 PCMH within 3 years

(continued)

**Table 2-3 (continued)**  
**PCMH recognition requirements for practices participating in MAPCP Demonstration**

State	Initial requirements			Subsequent requirements
	PCMH standards	Minimum score	Care processes emphasized (e.g., state-specific mandatory criteria not required in NCQA)	
North Carolina	NCQA  +  BCBSNC	Level 1 <i>(by end of first year)</i> Blue Quality Physician Program <i>(by end of second year)</i>	<ul style="list-style-type: none"> <li>BCBSNC's Blue Quality Physician Program requirements, which must be met by the end of the second year, entitle practices to an enhanced fee schedule, and require:               <ul style="list-style-type: none"> <li>E-prescribing</li> <li>Electronic claims submission</li> <li>Cultural competency training</li> <li>A triage protocol for after-hours care</li> </ul> </li> </ul>	—
Minnesota	Minnesota Health Care Home standards	Different standards for Years One, Two, and Three	<ul style="list-style-type: none"> <li>Year Two standards emphasize:               <ul style="list-style-type: none"> <li>Population management using a searchable electronic registry and risk stratification tools</li> <li>Care coordination and shared decision making</li> <li>Identification and addressing of barriers to patients taking an active role in their care</li> <li>Ongoing partnership with community-based resources</li> <li>Individualized care plans, integrated with any external care plans</li> <li>Quality improvement strategy</li> <li>Participation in learning collaborative</li> </ul> </li> <li>Reporting on quality measures:               <ul style="list-style-type: none"> <li>submitting Health Care Homes data through a statewide quality reporting system</li> </ul> </li> </ul>	Meet Minnesota's Health Care Home recertification standards at 15-month intervals, show evidence of plans to address "variances" from prior certification and recertifications.
Maine	NCQA	Level 1 + 10 core expectations <i>(within 1 year)</i>	<ul style="list-style-type: none"> <li>10 core expectations of practices:               <ul style="list-style-type: none"> <li>Leadership commitment</li> <li>Team-based approach to care</li> <li>Population management</li> <li>Enhanced beneficiary access</li> <li>Integrated care management</li> <li>Integrated behavioral and physical health</li> <li>Patient and family inclusion</li> <li>Community connections (including public health organizations)</li> <li>Commitment to reduce unnecessary spending, improve cost effectiveness</li> <li>Integration of health IT</li> </ul> </li> </ul>	Recertify as an NCQA Level 1 PCMH within 3 years

(continued)

**Table 2-3 (continued)**

**PCMH recognition requirements for practices participating in MAPCP Demonstration**

State	Initial requirements			Subsequent requirements
	PCMH standards	Minimum score	Care processes emphasized (e.g., state-specific mandatory criteria not required in NCQA)	
Michigan	BCBS Michigan's Physician Group Incentive Program: PCMH designation or NCQA	BCBS Michigan PCMH designation or NCQA Level 2	<ul style="list-style-type: none"> <li>Care processes emphasized in BCBS Michigan's PCMH standards ("must-pass" elements): <ul style="list-style-type: none"> <li>Population management (registry functionality)</li> <li>Expanded access (expanded hours, 24/7 access to a clinical decision maker, and 30% open access slots)</li> <li>Quality measurement (performance reporting)</li> <li>Care management staffing (either directly or through affiliated physician organization, at a minimum mandatory staffing ratio)</li> <li>Referral and tracking capacity between specialists and primary care practices</li> </ul> </li> <li>Affiliation with a physician organization</li> <li>Participation in learning activities</li> <li>Performance measures: utilization, clinical quality (e.g., asthma, cancer screening, diabetes, well-child visits, cardiovascular disease), capability (e.g., self-management supports available)</li> </ul>	Recertify as a BCBS Michigan PCMH annually or Recertify as an NCQA Level 2 PCMH within 3 years
Pennsylvania	NCQA	Level 1 + state-specific "must-pass" NCQA elements	<ul style="list-style-type: none"> <li>State-specific "must-pass" NCQA elements: <ul style="list-style-type: none"> <li>For practices certified with NCQA's 2008 PCMH standards: <ul style="list-style-type: none"> <li>Nonphysician staff perform basic care management (element 3C)</li> <li>Specific care management activities (element 3D)</li> <li>Patient education and self-management of conditions (element 4B)</li> </ul> </li> <li>For practices certified with NCQA's 2011 PCMH standards: <ul style="list-style-type: none"> <li>Care planning and management (NCQA 2011 element 3C)</li> </ul> </li> </ul> </li> <li>Quality measures used when calculating shared savings payments differ for adult and pediatric practices, but cover three domains: prevention; management of chronic conditions; and clinical care management</li> <li>Practices must demonstrate transformation on a state-specific self-assessment survey, and pass annual site audits to assess care management systems</li> </ul>	Recertify as an NCQA Level 1 PCMH within 3 years + meet a smaller number of state-specific "must-pass" elements

NOTES: Both the 2008 and 2011 NCQA PCMH standards use a three-tiered recognition approach, whereby practices are recognized as a Level 1, 2, or 3 PCMH, depending on the percentage of NCQA's standards they meet; Level 3 is the most advanced level of recognition. From 2008 to 2010, PCMH recognition was only available from NCQA using their 2008 standards. In 2011, practices could become recognized as a PCMH using NCQA's 2008 or 2011 standards. Starting in 2012, practices could use only NCQA's 2011 standards to obtain PCMH recognition.

BCBS = Blue Cross Blue Shield; BCBSNC = Blue Cross Blue Shield of North Carolina; EHR = electronic health record; ER = emergency room; HIE = health information exchange; IT = information technology; MAPCP = Multi-Payer Advanced Primary Care Practice; MU = meaningful use; NCQA = National Committee for Quality Assurance; P4P = pay-for-performance; PCMH = patient-centered medical home.

Although states emphasized different aspects of the PCMH model in the certification process (see **Table 2-3**), some common themes emerged across the eight states. Care coordinators or care managers (terms used interchangeably in this section, since different states used different terms for a role that was essentially the same) were clearly a central aspect of the PCMH model, and they were viewed as the most transformative and valuable part of the model in all eight states, though practices often were experimenting with how best to integrate these workers into their practice. Given the novelty of this role in practices, there was wide variation in every aspect of care coordination. Care coordinators had varied clinical backgrounds, ranging from registered nurses (RNs) (whom some practices considered more skilled in dealing with the most complex patients) to licensed practical nurses (LPNs), medical assistants (MAs), and licensed clinical social workers (who often were assigned patients with behavioral health issues). The size of care managers' patient panels varied (ranging from 75 to 150 patients in one state), and the criteria used to identify patients included a specific diagnosis, high utilization of health care services, or complex needs. Care managers sometimes engaged in a variety of activities, depending on whether they were managing the care of a moderate or a complex patient. For example, a moderate patient might receive diabetes self-management education about diet and exercise, while a complex patient might have their health care closely tracked and monitored, with contact following hospital visits or discharges to reconcile medications and ensure they understood their discharge instructions and had a follow-up visit scheduled.

In many states, practices routinely prepared previsit summaries identifying overdue preventive services for physicians and giving postvisit summaries to patients. Postvisit summaries identified ordered tests, recommended consultations, and included instructions on next steps. In many states, behavioral health gained an elevated focus in Year Two, as many practices increased screening and referrals to local counselors and sometimes hired in-house behavioral health professionals. Despite this increased focus, practices often noted a great need for additional resources in this area and shortages of local mental health professionals accepting new patients. In a few states, some practices offered group visits (e.g., for diabetic patients) and placed extra emphasis on adopting a team-based approach to care.

Practices varied both within and across states in the degree to which they were able to arrange for local hospitals to notify them and send them records when their patients were seen in an ER or admitted to or discharged from the hospital. For example, practices in Maine reported success in receiving notifications from hospitals, and practices in Pennsylvania reported difficulty with this process. Rhode Island practices, practically all of which obtained NCQA's most advanced degree of PCMH recognition (Level 3) by Year Two, often spoke of care compacts with specialists that identified providers' information needs and communication preferences.

Practices also varied in the degree to which they effectively used utilization data provided by payers, affiliated health care organizations, ACOs, or their own EHRs. For example, New York practices often complained that the data to which they had access was not timely enough to be actionable and was overwhelmingly voluminous. Practices in Rhode Island reported using the available data to identify patients to target with care coordination services and areas for their quality improvement efforts.

## **Practice Staffing Changes**

The most common staffing changes across the eight states were related to improving care coordination. Practices either hired at least one new staff person to serve as a care coordinator or shifted current staff responsibilities to free up time for an existing staff person to take on the role. Care coordinator roles varied across states, and practices worked to determine an ideal patient panel size for care coordinators. Care coordinator training and backgrounds also varied within and across states, but many practices noted that care coordinators had to be proactive, resourceful, and socially adept. Many practices felt that the care coordinator's ability to interact with patients was more important than their training or clinical knowledge.

"Working at the top of one's license" was also a common staffing theme across states. Many practices facilitated this by having MAs perform previsit planning and basic tasks, leaving mid-level providers and physicians available to tackle more sophisticated tasks. In some cases, practices hired additional support staff for patient scheduling and other administrative tasks, thereby allowing clinicians to focus on clinical needs.

Practices in some states also hired specialized staff, such as pharmacists, health educators, and behavioral health professionals. By offering these services in-house, they were able to improve continuity and coordination of care. Across states, practices focused on providing team-based care to meet patient needs and were optimistic that this was the "right way" to deliver care. Almost universally, practices said they wanted to hire additional staff (beyond the new staff mentioned above) if resources allowed, but, given financial constraints, practices used their existing staff strategically to deliver high-quality, patient-centered care.

## **Health Information Technology**

Across the eight states, a majority of participating practices had a working EHR before the start of the state initiative. Some states required practices to have EHRs to participate, while other states allowed practices to implement them during the course of the demonstration. Despite the pervasiveness of EHRs across states, there was great variation in the level of comfort practices had with their EHRs. In the second year, practices used their EHRs to support practice transformation with varying degrees of success. At a minimum, practices usually used EHRs to document services, order tests, record notes, and support electronic prescribing. Many practices hoped that they would be able to share records with local hospitals and health systems to improve continuity and coordination of care, but this type of information exchange was minimal in most states. Instead, practices typically faxed or e-mailed patient records to clinics and hospitals without the same type of EHR.

In several states, practices used EHRs to facilitate communication between physicians and support staff, including care coordinators and care managers. Some practices implemented patient portals that allowed patients to access their health records online. Many of these practices reported that low health literacy, lack of Internet access, or lack of interest prevented the tool from being widely used. Some practices began to use their EHRs to produce practice-level data about quality and utilization. Several states (including Michigan, Minnesota, and Pennsylvania) required practices to use patient registries as part of the demonstration. Some practices purchased stand-alone registry software (Pennsylvania provided it free of charge), and others used their

existing EHRs for registry functions. Practices found the registries helpful in identifying both high-utilization patients and those overdue for certain services.

Overall, practices across states generally believed an EHR allowed them to deliver better patient care, although many were still in the process of learning how to use their EHR most efficiently.

#### **2.4.2 Technical Assistance**

All eight states provided participating practices with technical assistance. This varied in scope and intensity by state, but there were some common strategies, including the following:

- *Learning collaborative sessions.* All states offered practices some combination of in-person and virtual (e.g., webinar) shared learning activities. Participation levels varied widely across states: in some states, all practices sent at least one representative to in-person learning sessions, while in others, only a minority of practices attended. Practices across the states valued both the educational aspects of the learning sessions and the opportunity to network with peer practices for more informal learning. Topics ranged from care guidelines for certain clinical conditions to strategies for leveraging community resources to provide needed, but nonmedical, services. Practices in several states found the level of educational material to be either too elementary or too advanced. In response, at least one state developed separate beginner and advanced “tracks,” so that practices could collaborate and learn with other practices of a similar level of medical home maturity. (Larger practices typically had more advanced PCMH capabilities, and smaller practices typically faced more obstacles to adopting this model.)
- *Practice coaching.* Many states offered practice coaching to some extent (Maine, Pennsylvania, Rhode Island, North Carolina, and Vermont). These coaches had varying titles and roles across states. Generally, they assisted practices in a range of activities designed to aid their transformation to medical homes. These activities ranged from teaching practices to use the Plan-Do-Study-Act (PDSA) approach to making incremental changes to care processes to shepherding practices through the PCMH recognition process. The intensity of practice coaching also varied significantly across states. In some states, practice coaches worked with practices as often as weekly; in others, they visited the practice only once every few months. Practices in some states found this form of technical assistance “redundant,” especially after they had already undergone their initial PCMH recognition. Other practices described practice coaching as “integral” to their medical home transformation.
- *Data.* Practices in all states received quality and utilization data from a variety of sources (e.g., states, private payers, RTI), but the extent to which they actually used these data varied significantly. RTI’s practice feedback reports were cited as extremely helpful by some practices, but were unfamiliar to others. The quality of data reports from private payers varied greatly. The timeliness of data was problematic in many states, and practices lamented that much of the data they received were too old to be useful. Generally, small practices were ill equipped to use quality and utilization data strategically, but some larger practices or systems reported using it extensively. For

example, several practices analyzed utilization data to identify high utilizers and to create care management plans to reduce unnecessary care.

Overall, the success of technical assistance efforts varied between practices and across states. Because practices differed in their stage of medical home transformation, technical assistance had to be targeted to individual practices. At the time of our second site visit, however, some practices felt the assistance was still too broad. That said, many practices across states spoke highly of the various forms of technical assistance offered and took advantage of it as best they could.

### **2.4.3 Payment Supports**

Demonstration payment methods and generosity varied widely by state, but generally provided payments to practices of no more than \$10 PMPM; *Table 2-4* details MAPCP Demonstration payments to practices in each of the eight states.

**Table 2-4**  
**PMPM payments to MAPCP Demonstration practices**

State	Medicare	Medicaid	Private payers
New York	\$7.00 <sup>1</sup> (includes \$0.50 for P4P incentive pool and varying amounts for support organizations)		
Rhode Island	Payment capped at \$6.00 <sup>2</sup>	<p>For Medicaid managed care and private payers:</p> <p><u>Developmental contract start-up (1st year):</u> \$3.00 +\$2.50<sup>2</sup> (for nurse care manager)</p> <p><u>Developmental contract transition (2nd year):</u> \$5.50<sup>2</sup> +\$0.50 if quality measurement/reporting requirement met</p> <p><u>Developmental contract performance year one (3rd year):</u> \$5.50<sup>2</sup> +\$0.50 for each quality, patient experience, or utilization performance target met (up to a maximum of \$7.50)</p> <p><u>Developmental contract performance year two (4th year):</u> \$5.50<sup>2</sup> +\$0.50 for achieving 4 out of 7 quality performance targets OR +\$0.75 for meeting 6 out of 7 quality performance targets +\$0.50 for achieving 2 out of 3 patient experience performance targets +\$1.25 for achieving inpatient admissions reduction targets +\$0.75 for achieving ER visit reduction target (Up to a maximum of \$8.75)</p> <p><u>Developmental contract performance year two-A (5th year):</u> \$5.50 (0 performance targets met) +\$0.50 for achieving five out of seven quality performance targets and testing new measures +\$0.50 for achieving four out of six patient experience performance targets +\$0.50 for achieving inpatient admissions reduction targets +\$0.50 for achieving ER visit reduction target +\$1.25 for managing high-risk patients and reporting on transitions of care, nurse care manager metrics (Up to a maximum of \$8.75)</p>	
	<p><u>Original 2-year contract:</u> \$3.00 +\$1.16 (for nurse care manager)<sup>2</sup></p> <p><u>Year One renewal:</u> \$5.50<sup>2</sup></p> <p><u>Year Two+ renewals:</u> \$5.00<sup>2</sup> (0–1 performance targets met) / \$5.50 (utilization target and 1 other target met) / \$6.00 (all targets met)</p>		
Vermont	\$1.20 to \$2.39 (depending on NCQA 2008 score) / \$1.36 to \$2.39 (depending on NCQA 2011 score)		
North Carolina	\$2.50 / \$3.00 / \$3.50 (NCQA Level 1 / 2 / 3)	\$5.00 / \$2.50 (ABD3 patients / non-ABD patients)	BCBSNC: Enhanced fee schedule equivalent to a minimum of \$1.50 State Employee Health Plan: inclusive with BCBSNC enhanced fee schedule above

(continued)

**Table 2-4 (continued)**  
**PMPM payments to MAPCP Demonstration practices**

State	Medicare	Medicaid	Private payers
Minnesota <sup>3</sup>	\$10.14 (1–3 conditions) / \$20.27 (4–6 conditions) / \$30.00 (7–9 conditions) / \$45.00 (10+ conditions) +15% for mental illness +15% for patients who speak English as a second language	\$10.14 (1–3 conditions) / \$20.27 (4–6 conditions) / \$40.54 (7–9 conditions) / \$60.81 (10+ conditions) +15% for mental illness +15% for patients who speak English as a second language	State allows any payment methodology consistent with Medicaid’s MAPCP Demonstration payment rates
Maine	\$6.95	\$12.00	\$3.00
Michigan	\$2.00 +\$4.50 (if have a care manager <sup>5</sup> ) +P4P incentives	\$1.50 +\$3.00 (if have a care manager <sup>4</sup> ) +P4P incentives	Payment methodology that is actuarially equivalent to \$1.50 +\$3.00 (if have a care manager <sup>5</sup> ) +P4P <sup>2</sup> incentives
	(Public payers contribute \$3.00 PMPM to an incentive pool <sup>6</sup> )		(Private payers pay incentives equivalent to \$3.00 PMPM <sup>5</sup> )
Pennsylvania	<u>Year 1:</u> \$1.50 + \$0.60 (age 1–18) / \$1.50 (age 19–64) / \$5.00 (age 65–74) / \$7.00 (age 75+) + Up to 40% of the net savings they generate for a payer, based on cost and quality performance <u>Year Two:</u> \$1.28 + \$0.51 (age 1–18) / \$1.28 (age 19–64) / \$4.25 (age 65–74) / \$5.95 (age 75+) + Up to 45% of the net savings they generate for a payer, based on cost and quality performance <u>Year Three:</u> \$1.08 + \$0.43 (age 1–18) / \$1.08 (age 19–64) / \$3.61 (age 65–74) / \$5.06 (age 75+) + Up to 50% of the net savings they generate for a payer, based on cost and quality performance		

**NOTES:**

- <sup>1</sup> In New York, practices are paid \$7.00 PBPM. From this amount, practices are required to contribute \$0.50 to a P4P incentive pool administered by the AHI, \$0.10 to AHI to administer this P4P incentive pool, and \$0.50 to AHI for vendor management, a data warehouse, and other centralized activities. The remaining \$5.90 for practices support care management and other centralized services, such as quality improvement and reporting activities in Pods 2 and 3, and enhanced physician salaries in Pod 2. As an alternative to paying practices \$7.00 PMPM, private payers can increase payment rates for evaluation and management visits in a manner that is actuarially equivalent to \$7.00 PMPM.
- <sup>2</sup> For practices that used a care manager employed by South County Hospital, this amount was reduced by \$1.16 in Year One of the MAPCP Demonstration and \$1.50 in Year Two of the demonstration.
- <sup>3</sup> Minnesota gave 37 practices \$5,000 mini grants in 2010, and funded technical assistance for four safety net clinics in 2011.
- <sup>4</sup> Paid to practice if practice funds care manager salary; otherwise paid to physician organization (see Table 2-5).
- <sup>5</sup> Incentive payment goes to physician organization, which pays at least 80 percent to practices.

ABD = aged, blind, or disabled; AHI = Adirondack Health Institute; BCBS = Blue Cross Blue Shield; BCBSNC = Blue Cross Blue Shield of North Carolina; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; P4P = pay-for-performance; PBPM = per beneficiary per month; PMPM = per member per month.

In some states (Maine, Vermont, Michigan, New York, and North Carolina), MAPCP Demonstration payments were available not only for practices, but also for other supporting organization. These payments are described in *Table 2-5*.

**Table 2-5**  
**PMPM payments to MAPCP Demonstration supporting organizations**

State	Medicare	Medicaid	Private payers
New York <sup>1</sup>	Pods (physician practice support organizations): Dollar amounts vary by Pod (for care management and other centralized services) AHI: \$0.50 (for vendor management, data warehouse, and other activities) \$0.10 (administration fee for P4P incentive pool) \$0.50 (contribution to P4P incentive pool, which is then reallocated to practices)		
Rhode Island	South County Hospital: \$1.50 to employ a care manager shared across 7 practices in Washington County CSI management: \$0.28	—	CSI management: Lump sum varied by payer
Vermont	Community Health Teams: \$1.59 Support and Services at Home program: \$5.08	Community Health Teams <sup>2</sup> : \$84,770	Community Health Teams <sup>2</sup> : Blue Cross Blue Shield of Vermont- \$84,770; Cigna- \$63,770; Mohawk Valley Plan- \$38,920
North Carolina	Community Care Networks: \$6.50	Community Care Networks: \$13.72 (ABD patients) \$3.72 (non-ABD patients)	Community Care Networks: \$2.50 (paid by BCBSNC) Annual lump sum based on a 1:40 ratio of 1 full-time equivalent nurse care manager to 40 high-risk members (paid by the State Employee Health Plan)
Minnesota	—	—	—
Maine	Community care teams: \$2.95	Community care teams: \$129.50 for high-risk Medicaid beneficiaries (estimated as top 5% of panel) in practices certified as Health Homes <sup>3</sup>	Community Care teams: \$0.30
Michigan	Physician organizations: \$4.50 to pass through to practices that employ care manager, or to employ care manager on behalf of practices + up to 20% of P4P incentives MAPCP Demonstration program management <sup>4</sup> : \$0.26	Physician organizations: \$3.00 to pass through to practices that employ care manager, or to employ care manager on behalf of practices + up to 20% of P4P incentives MAPCP Demonstration program management <sup>4</sup> : \$0.26	Physician organizations: \$3.00 to pass through to practices that employ care manager, or to employ care manager on behalf of practices MAPCP Demonstration program management <sup>4</sup> : \$0.26

(continued)

**Table 2-5 (continued)**  
**PMPM payments to MAPCP Demonstration supporting organizations**

State	Medicare	Medicaid	Private payers
Pennsylvania	—	—	—

NOTES:

- <sup>1</sup> In New York, practices are paid \$7.00 PBPM. From this amount, practices are required to contribute \$0.50 to a P4P incentive pool administered by the AHI, \$0.10 to AHI to administer this P4P incentive pool, and \$0.50 to AHI for vendor management, a data warehouse, and other centralized activities. The remaining \$5.90 for practices support care management and other centralized services, such as quality improvement and reporting activities in Pods 2 and 3, and enhanced physician salaries in Pod 2. As an alternative to paying practices \$7.00 PMPM, private payers can increase payment rates for E&M visits in a manner that is actuarially equivalent to \$7.00 PMPM.
- <sup>2</sup> In Vermont, Medicaid and commercial payers are responsible for a percentage of the total cost of the Community Health Teams, rather than a PMPM.
- <sup>3</sup> In Maine, only two demonstration practices are not certified as Health Homes by the state's Medicaid program.
- <sup>4</sup> In Michigan, all payers fund program management, evaluation, data analytics, and learning activities through a PMPM administrative support fee.

ABD = aged, blind, or disabled; AHI = Adirondack Health Institute; BCBS = Blue Cross Blue Shield; CSI = Chronic Care Sustainability Initiative; E&M = evaluation and management; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; P4P = pay-for-performance; PMPM = per member per month.

Despite the variation in payment amounts, interviewees' views about payments were quite similar across all eight MAPCP Demonstration states. The bottom line was that practices appreciated receiving these payments, but they felt that payment amounts were insufficient to cover the cost of all of the enhancements they made to their practice. Demonstration payments usually were used directly to offset the cost of new care coordinators' salaries or the purchase or upgrading of EHRs. Some payments simply went towards practices' bottom lines (particularly in small practices that already struggled financially). Practices owned by larger health care systems typically reported not receiving demonstration payments directly, as they were paid to their organization's corporate headquarters (as are all other reimbursements received by these types of practices).

Some practices wished that the demonstration had been all-payer (e.g., including patients from self-insured employer plans), instead of multi-payer, so that they would have seen greater financial rewards. This also would have allowed them to offer medical home services to all of their patients, instead of having to keep track of which patients were insured by which payer. Nevertheless, practices were worried about what would happen when the MAPCP Demonstration ended and payments stopped.

Other concerns about demonstration payments were more state-specific and driven by billing logistics, technical difficulties, and payment methodologies resulting in some practices failing to receive the monthly demonstration payments they expected.

- In Michigan, some practices complained about the administrative burden associated with documenting and submitting FFS claims for demonstration payments (required by some payers, but not Medicare).

- In Pennsylvania, practices agreed to reductions in PMPM demonstration payments in the second and third years of the MAPCP Demonstration in exchange for the chance to earn shared savings payments. Most then were quite frustrated when they failed to generate enough savings to qualify for these bonuses.
- In Minnesota, many practices opted not to submit claims to receive monthly demonstration payments once they realized that the cost of modifying their billing systems to generate claims without a face-to-face visit would exceed the revenues earned from submitting these claims. A major reason for this was that many practices had very few FFS Medicaid and Medicare patients, since Minnesota had the highest penetration of Medicare Advantage plans in the country (51%) and an even higher percentage of Medicaid beneficiaries in managed care (66%). Minnesota practices also complained about tying payment amounts to the number of beneficiaries' chronic conditions, since patients could have a small number of chronic conditions yet still be quite complex. Minnesota providers also were displeased about needing to spend time convincing patients to opt-in to the program, as required by the state.
- In North Carolina, practices reported significant ongoing problems with the state's new Medicaid payment system, NCTracks. At the time of our second site visit interviews, all practices reported having received incomplete or no Medicaid payments since the launch of the new system that year. Practice staff also were frustrated that solving related billing issues required diverting staff from PCMH activities.

## 2.5 Outcomes

This section provides a cross-state summary for five quantitative outcomes that are used to illustrate whether the MAPCP Demonstration improved outcomes. Below we provide estimates of changes in all quantitative outcomes analyzed in this evaluation. *Appendix H* contains tables that summarize key outcome changes that are associated with the MAPCP Demonstration. These tables present the associated changes as rates, as well as by totals across the first 2 years of the MAPCP Demonstration.

### 2.5.1 Quality of Care, Patient Safety, and Health Outcomes

The goal of quality measurement and quality improvement initiatives is to improve health outcomes for all patients. In fact, four of the eight MAPCP Demonstration states (New York, Rhode Island, North Carolina, and Michigan) explicitly listed “improving patient outcomes” as a key objective for participation in their PCMH initiative. The other four states implied this in addition to other goals, such as reducing acute events (e.g., hospital or ER admissions).

To improve these outcomes, each state implemented several practice transformation activities, including the increased use of health IT in the form of patient registries, quality measurement, and patient follow-up, especially after an acute event. Care coordination was mentioned as a key objective to align medical and nonmedical resources better with patient needs, such as nutrition education, fall prevention, and case management for those with diabetes or other chronic conditions. All states mentioned the use of care managers or a care team to

follow up with patients. Some of these teams met regularly to discuss their patient panel and specific quality improvement activities. The key patient safety effort mentioned across all MAPCP Demonstration states was medication management. This effort occurred after hospital discharge and continued in the form of patient education, titration, compliance, and using health IT to monitor drug interactions.

In **Table 2-6**, we report the average change for each of the eight states during the first 24 months of the MAPCP Demonstration for five process of care measures and two diabetes composite measures. Using these diabetes and ischemic vascular disease (IVD) process of care measures identifiable through Medicare claims, we examine the probability of beneficiaries receiving the recommended services. These dichotomous (yes/no) indicators are modeled using logistic regression models. Values for these measures correspond to the difference in probability of receiving care for beneficiaries assigned to the MAPCP Demonstration practices relative to beneficiaries assigned to PCMH and non-PCMH comparison group practices. The results associated with these indicators are interpreted as the percentage point difference in the probability of meeting the quality indicator in both years overall. A *negative* value corresponds to a *decrease* in the likelihood of received care relative to the comparison group. A *positive* value corresponds to an *increase* in the likelihood of received care relative to the comparison group. MAPCP Demonstration beneficiaries are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care, relative to comparison group beneficiaries after the start of the demonstration.

Next, in **Table 2-7**, we report the average change for each of the eight states during the first 24 months of the MAPCP Demonstration for several outcomes measures, including one avoidable catastrophic medical event measure and three prevention quality composite indicators (otherwise considered as preventable hospitalizations). We examine covariate-adjusted differences in the rates of avoidable catastrophic events and Prevention Quality Indicator (PQI) admissions per 1,000 beneficiary quarters. Values for these measures correspond to the difference in rates of events for beneficiaries assigned to MAPCP Demonstration practices relative to beneficiaries assigned to PCMH and non-PCMH comparison group practices. A *negative* value corresponds to a *decrease* in the rate of events relative to the comparison group. A *positive* value corresponds to an *increase* in the rate of events relative to the comparison group. If the MAPCP Demonstration was associated with improvements in the quality and access to ambulatory care, we expect demonstration beneficiaries to have reduced rates (i.e., a significant negative value) for these avoidable hospitalizations relative to comparison group beneficiaries.

We observed mixed findings for process of care measures among the states. When compared to PCMH and non-PCMH comparison groups, we found no association between the MAPCP Demonstration and the IVD process of care measure (i.e., complete lipid panel). For diabetes management, we found that five of the eight states (New York, Rhode Island, North Carolina, Minnesota, and Michigan) had some increases in the likelihood of MAPCP Demonstration beneficiaries receiving at least one of the guideline-recommended services, and this was largely for HbA1c testing. In two states (Pennsylvania and Maine), diabetes care declined for demonstration beneficiaries in the first 2 years.

For preventable hospitalizations, we found no significant differences in all eight states in terms of avoidable catastrophic events. For the prevention quality indicator composite measures, we found no differences in six out of the eight states and unfavorable findings in the remaining two states. Vermont had significant increases in the overall and chronic PQI composite rates when compared to its non-PCMH comparison group. Likewise, North Carolina also had a significant increase in preventable hospitalizations for acute conditions when compared to its non-PCMH comparison groups.

**Table 2-6**  
**Comparison of average changes for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	New York		Rhode Island		Vermont		North Carolina	
	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
HbA1c testing	1.97	1.37	7.85*	7.88	-3.29	-0.88	1.36*	1.52*
Retinal eye examination	2.02*	3.00*	2.65	-0.03	-1.74	-1.21	-1.14	-0.47
LDL-C screening	1.14	3.19	1.61	3.70	-2.56	-0.68	2.38	1.16
Medical attention for nephropathy	-2.95	4.18	-2.14	1.00	-1.73	0.39	3.47	1.61
Received all 4 diabetes tests	0.64	2.96	1.68	3.30*	-2.92	-0.06	0.88	-0.20
Received none of the 4 diabetes tests	-0.57	-0.34	-0.58	-0.82	-1.00	0.27	-0.67*	-0.67*
Total lipid panel	1.99	1.92	-1.83	-0.33	-2.54	-2.48	2.56	1.90

(continued)

**Table 2-6 (continued)**  
**Comparison of average changes for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	Minnesota		Maine		Michigan		Pennsylvania	
	Vs. PCMH CG <sup>1</sup>	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
HbA1c testing	—	1.00	1.48	1.66	-0.36	1.13*	-0.03	0.87
Retinal eye examination	—	2.36	-2.00*	2.07	-0.85	-0.17	0.45	-0.49
LDL-C screening	—	1.28	-0.65	0.73	-0.39	-1.22	0.41	1.71
Medical attention for nephropathy	—	4.64*	-2.64	-0.11	-0.28	0.73	-4.43*	0.65
Received all 4 diabetes tests	—	4.99*	-1.74	0.74	0.28	-0.02	-3.31	-0.44
Received none of the 4 diabetes tests	—	-0.26	-0.06	-0.07	0.23	-0.05	-0.09	-0.27
Total lipid panel	—	-1.14	2.56	-1.14	-1.47	-1.66	2.26	0.80

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries. It represents a weighted average of the differences observed in the first 8 quarters after assignment.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

<sup>1</sup> Minnesota does not have a PCMH CG because the HCH certification is so widespread that identifying sufficient numbers of non-HCH practices to create a PCMH CG is not possible.

CG = comparison group; HCH = Health Care Homes; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 2-7**  
**Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

<b>Outcome</b>	<b>New York</b>		<b>Rhode Island</b>		<b>Vermont</b>		<b>North Carolina</b>	
	<b>Vs. PCMH CG</b>	<b>Vs. non- PCMH CG</b>	<b>Vs. PCMH CG</b>	<b>Vs. non- PCMH CG</b>	<b>Vs. PCMH CG</b>	<b>Vs. non- PCMH CG</b>	<b>Vs. PCMH CG</b>	<b>Vs. non- PCMH CG</b>
Avoidable catastrophic events <sup>1</sup>	-0.41	0.07	-0.28	0.46	0.20	0.09	-0.51	-0.52
PQI admissions—overall <sup>2</sup>	-1.72	-1.74	-1.49	1.24	1.28	1.29*	0.43	0.52
PQI admissions—acute <sup>3</sup>	-0.63	-1.29	-0.74	0.38	0.47	0.51	0.25	0.87*
PQI admissions—chronic <sup>4</sup>	-1.22	-0.40	-0.72	0.84	0.88	0.77*	0.09	-0.29

(continued)

**Table 2-7 (continued)**  
**Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	Minnesota		Maine		Michigan		Pennsylvania	
	Vs. PCMH CG <sup>5</sup>	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
Avoidable catastrophic events <sup>1</sup>	—	0.02	0.19	0.55	-1.17	-0.52	-0.79	-0.36
PQI admissions—overall <sup>2</sup>	—	-0.38	0.52	0.29	-1.01	-0.44	-0.08	-0.12
PQI admissions—acute <sup>3</sup>	—	-0.21	-0.10	-0.46	-0.01	-0.65	0.46	-0.21
PQI admissions—chronic <sup>4</sup>	—	-0.07	0.65	0.77	-0.94	0.16	-0.58	0.03

NOTES:

- All measures are rates per 1,000 person quarters.
  - Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries. It represents a weighted average of the differences observed in the first 8 quarters of the demonstration.
  - A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- <sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.
- <sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.
- <sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.
- <sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.
- <sup>5</sup> Minnesota does not have a PCMH CG because the HCH certification is so widespread that identifying sufficient numbers of non-HCH practices to create a PCMH CG is not possible.

CG = comparison group; COPD = chronic obstructive pulmonary disease; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home; PQI = prevention quality indicators.

\* Statistically significant at the 10 percent level.

## 2.5.2 Access to Care and Coordination of Care

Improving access to care and coordination of care is a central focus of all eight state initiatives. In all states, participating practices had to meet expectations related to care access and coordination, through requirements to achieve some form of PCMH recognition (most commonly NCQA PCMH Recognition) and, in some states, additional requirements. Every state incorporated nurse care managers or other care coordinators in its initiative. States varied in whether or not practices were required to hire nurse care manager/care coordinators (Maine, Minnesota, Pennsylvania, Rhode Island) or whether they had the option of using shared care managers/care coordinators employed by an external organization (Michigan, New York, North Carolina). Maine also incorporates CCTs, which provided additional care management support to participating practices' most complex patients. Rather than using care managers, Vermont practices were required to enter into an agreement with their regional CHT, which offered care coordination and community resources; the Support and Services at Home (SASH) program further provided care coordination to Medicare beneficiaries living in subsidized housing complexes.

During Year Two, practices continued their efforts to improve access to care, including offering open access scheduling, expanded hours, better after-hours coverage, improved telephone access, and Web-based patient portals. In some states, expanded hours and 24/7 access were widely available at the end of Year One, while in other states practices expanded access during Year Two. Practices in several states reported greater use of patient portals. Some practices described ongoing challenges in staffing extended hours and changing patient habits of seeking care through ERs even when extended hours and after-hours coverage were available. Access to behavioral health services often was cited as a particular challenge.

Care coordination, including efforts targeting high-risk patients and patients discharged from the hospital, remained a priority during Year Two. Practices worked to refine the roles of clinical staff, particularly nurse care managers, by more clearly defining staff roles, developing protocols to identify patients who would benefit most from care management, improving coordination with external resources such as CCTs and CHTs, and increasing communication with hospitals about discharged patients. Some practices made greater use of data from EHRs and HIEs to inform care coordination. Other practices reported that lack of data hindered their ability to identify patients who would most benefit from these services. Although there were some improvements in communication with hospitals about patient discharges, many practices reported that lack of timely data continued to undermine their ability to manage care transitions from the hospital to the community.

**Table 2-8** reports the average change for each of the eight states during the first 2 years of the MAPCP Demonstration for eight outcomes that are indicators of access to and coordination of care, comparing Medicare beneficiaries assigned to MAPCP Demonstration practices with beneficiaries assigned to PCMH and non-PCMH comparison group practices. The first four measures address utilization of primary care and specialist ambulatory services: primary care visit rate, medical specialist visit rate, surgical specialist visit rate, and primary care visits as a percentage of the total number of ambulatory care visits. MAPCP Demonstration beneficiaries are expected to have increased utilization of primary care services and decreased

utilization of specialist services relative to comparison group beneficiaries after the start of the MAPCP Demonstration.

We analyzed two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge. The MAPCP Demonstration is expected to increase the follow-up visit rate and reduce the unplanned readmission rate. Finally, we assessed continuity of care using an index, ranging in values from 0 to 1, that measured the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. A higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plan. MAPCP Demonstration beneficiaries are expected to have higher values on the continuity of care index. Because the continuity of care index takes into account both visits in the medical home and referred visits outside the medical home, the index will increase if nonreferred visits decline even if medical home visits do not increase (for example, if medical homes make greater use of nonbillable contacts, such as telephone calls or care coordinator contacts, that do not appear in claims data).

With the exception of primary care visits as a percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge during a quarter. Values for these outcomes correspond to the change in rate of events for beneficiaries assigned to MAPCP Demonstration practices relative to beneficiaries assigned to PCMH and non-PCMH comparison group practices. For the six rate of event measures, a *negative* value corresponds to a *decrease* in the rate of events relative to the comparison group. A *positive* value corresponds to an *increase* in the rate of events relative to the comparison group. Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits, both of which are annual measures, are categorized by quintiles of the outcome distribution. The lowest quintile corresponds to low continuity of care and a low percentage of primary care visits. The highest quintile corresponds to high continuity of care and a high percentage of primary care visits. A *positive* value means an *increase* in the likelihood relative to the comparison group of being in a specific quintile, while a *negative* value means a *decrease* in the likelihood.

For the measures examined, MAPCP Demonstration practices were most likely to show improved performance for continuity of care, with significant association in the expected direction for one of the comparison groups in five states (Rhode Island, Vermont, Maine, Minnesota, and Pennsylvania). For all other measures, significant changes in the expected direction were found only in one or two states. There were significant changes in the surgical specialist visit rate in five states, but the change in four states (New York, North Carolina, Maine, and Michigan)—an increase in the visit rate—was not in the hypothesized direction.

**Table 2-8**  
**Comparison of average changes for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	New York		Rhode Island		Vermont		North Carolina	
	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
Primary care visits (per 1,000 beneficiary quarters)	-16.33	19.26	64.44	19.57	-56.42	-20.49	-25.14	-4.33
Medical specialist visits (per 1,000 beneficiary quarters)	-9.96	-6.8	19.0	-16.9	0.89	-40.18*	-14.73	-19.94
Surgical specialist visits (per 1,000 beneficiary quarters)	14.56*	17.28*	21.54	13.08	-11.97*	-12.45	21.67*	27.32*
Primary care visits as a percentage of total visits (higher quintile = larger percentage)								
1st quintile	2.74	0.31	-0.93	-1.54	2.71	-2.31	-0.76	-0.53
5th quintile	-1.54*	-0.16	0.42	0.56	-1.22	1.09	0.58	0.39
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)	-0.1	19.06	7.18	10.93	35.34	-7.4	-12.62	6.35
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)	-15.55	1.33	-30.02	23.51	-13.69	-1.94	3.25	8.08
Continuity of care index (higher quintile = better continuity of care)	4.66*	3.10*	-3.55*	-1.34	-1.24	-3.72*	0.38	-0.34
1st quintile								
5th quintile	-3.04*	-2.00*	3.01*	0.86	0.69	1.96*	-0.36	0.32

(continued)

**Table 2-8 (continued)**  
**Comparison of average changes for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	Minnesota		Maine		Michigan		Pennsylvania	
	Vs. PCMH CG <sup>1</sup>	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
Primary care visits (per 1,000 beneficiary quarters)	—	10.59	20.7	56.90*	-4.29	3.23	61.31*	56.08*
Medical specialist visits (per 1,000 beneficiary quarters)	—	-3.52	-5.05	-20.61	-30.19	-6.9	-30.55	-28.65
Surgical specialist visits (per 1,000 beneficiary quarters)	—	-4.55	-0.69	10.47*	-2.88	9.08*	-3.33	-5.78
Primary care visits as a percentage of total visits (higher quintile = larger percentage)								
1st quintile	—	-2.03*	-1.75	-1.79	-1.3	0.27	-1.71	-2.89*
5th quintile	—	1.45*	0.84	0.86	0.76	-0.19	1.17	1.15*
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)	—	-6.17	70.27	2.62	17.06	27.18*	43.9	44.77*
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)	—	-22.71*	-14.74	6.66	-29.55*	-4.44	-6.45	-8.63
Continuity of care index (higher quintile = better continuity of care)								
1st quintile	—	-0.59	-3.47*	-1.22	-1.3	-1.54*	-1.32	-2.62*
5th quintile	—	0.57	1.39*	0.56	1.04	1.27*	1.05	1.23*

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries. It represents a weighted average of the differences observed in the first 8 quarters of the demonstration.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution. It represents a weighted average of the differences observed in the first 8 quarters after assignment.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.

<sup>1</sup> Minnesota does not have a PCMH CG because the HCH certification is so widespread that identifying sufficient numbers of non-HCH practices to create a PCMH CG is not possible.

CG = comparison group; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

Improvements in continuity of care in many states likely reflected care managers' responsibilities to increase coordination with specialists, particularly for high-risk patients. Although increasing access to appointments at the PCMH was a central goal in all states, we generally did not find increases in primary care visit rates relative to comparison group practices. MAPCP Demonstration practices made greater use of contacts by telephone, e-mail, or through a patient portal to increase access and these types of contacts cannot be observed in claims data. New York described ongoing barriers to expanding access due to the limited supply of physicians. Although the finding that surgical specialist visit rates increased relative to comparison group practices in half of the states was contrary to expectations, it is possible that there had been barriers to receiving these services and MAPCP Demonstration practices facilitated access to needed care.

### **2.5.3 Patient Experience with Care**

One of the topics covered during the 2013 site visits was perceptions of beneficiary experience with care during Year Two of the MAPCP Demonstration. The discussions focused on state-specific practice features that were expected to improve beneficiaries' experience with care and on changes occurring since the Year One visits. Information on patient experience most often was provided by representatives of CHTs, health care networks, care managers, and patient advocates. In this section, we provide a cross-state summary of perceptions described in at least two or more of the MAPCP Demonstration states.

A common underlying premise of these discussions was that care management activities improved both shared decision-making and self-management skills, which, in turn, raised levels of patient engagement. In practice, however, considerably less emphasis was given to shared decision making, which was generally considered to be more difficult to realize and potentially less effective in improving beneficiary experience.

Care managers, care coordinators, CHTs, and health educators were the most visible manifestations of the MAPCP Demonstration to patients. Care management activities repeatedly were cited as the key to improving beneficiary self-management skills. Many interviewees, however, noted the difficulty of modifying deeply ingrained behaviors for chronic diseases like diabetes and obesity.

Patient engagement was enhanced by establishing one-to-one relationships between beneficiaries and care managers. This provided beneficiaries with a single point of contact with whom they could discuss concerns. Respondents also pointed to home visits, visits during hospital stays, and the ability to make unscheduled walk-in visits as ways of strengthening these one-to-one relationships. To enhance the effectiveness of the care management relationship, three states (North Carolina, New York, and Vermont) offered care managers training in motivational interviewing. In addition, Maine, Michigan, and New York established patient advocacy groups to raise awareness of beneficiary issues.

The availability of patient education classes appeared to have expanded in Year Two. The most common class topics were nutrition, physical therapy, smoking cessation, diabetes care, asthma, chronic pain, weight loss, and healthy living. Some states (Pennsylvania and Vermont)

also experimented with organizing group visits for patients with the same chronic disease, but frequently found it difficult to find times convenient for a critical mass of beneficiaries to attend.

As health IT capabilities and usage progressed during Year Two, patient portal features expanded in four states (Maine, New York, Pennsylvania, and Rhode Island) to include scheduling appointments, direct messaging, and obtaining laboratory test results and educational materials. These states also used the patient portal to share written documentation with patients at the end of visits, such as lists of self-management goals, reports of physiological values and tests results, and clinical summaries of office visits.

Respondents in five states (Maine, New York, Pennsylvania, Rhode Island, and Vermont) provided insights on beneficiary experience based on results from recent patient satisfaction surveys, such as the Clinician & Group Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey. Survey results were mixed, revealing both strengths and weaknesses in patient experience domains. States such as Maine and New York used the results to target areas with survey scores indicating the greatest room for improvement. Domains specifically targeted for improvement were physician-patient communication patterns, after-hours access, and relationships with medical office staff.

Interviewees in four states (Minnesota, North Carolina, New York, and Pennsylvania) expressed concerns that the practice changes promoted by the MAPCP Demonstration would not be apparent to many beneficiaries and would not, therefore, be reflected in patient experience surveys. Many beneficiaries were unaware that their practices were undergoing medical home transformation. Beneficiaries with chronic diseases and high utilizers tended to be more familiar with the practice changes because they were most likely to have developed relationships with care managers and attended educational classes and workshops.

In the Final Report, we plan to report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries, which will provide a more in-depth analysis of the association between the MAPCP Demonstration and changes in beneficiary experience with care.

#### **2.5.4 Effectiveness (Utilization & Expenditures)**

In their applications for the MAPCP Demonstration, the states projected reductions in avoidable inpatient hospitalizations, avoidable ER visits, and hospital readmissions expected to result from shifting patient care from hospital to primary care settings, targeting and helping high-risk beneficiaries navigate health care issues in a more personal environment, implementing more proactive rather than reactive care, and augmenting services provided by the PCMHs.

In **Table 2-9**, we report the average change in total Medicare expenditures and several expenditure categories for each of the eight states during the first 2 years of the MAPCP Demonstration. In **Table 2-10**, we report on two utilization outcomes (rate of all-cause admissions and ER visits not leading to hospitalization). The expenditure values estimate whether the MAPCP Demonstration is associated with changes in the averages of per beneficiary per month (PBPM) payments. The utilization values estimate whether the demonstration is associated with changes in the average number of all-cause admissions and ER visits per 1,000 beneficiary quarters. For details about how these estimates were derived, see **Section 1.2.6**.

**Table 2-9**  
**Comparison of average changes for Medicare expenditures and utilization rates:**  
**First 2 years of MAPCP Demonstration**

Outcome	New York		Rhode Island		Vermont		North Carolina	
	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
Total Medicare	-26.82*	-17.36	-32.08	-1.53	-31.17	-65.35*	-14.54	-13.74
Acute-care	-27.94*	-10.19	-30.23	-3.41	-0.22	-21.08*	-4.67	-15.78
Post-acute-care	-1.98	-3.32	-7.78	0.12	-19.06*	-20.16*	-3.69	3.51
ER	5.09*	3.25	-2.37	1.58	2.89*	-3.90*	1.44	0.99
Outpatient	17.88*	11.74*	6.91	-1.72	16.04*	-3.58	-1.56	6.17
Specialty physician	-6.79*	-4.23*	5.31	5.37*	-5.38*	-4.51*	2.56	-3.9
Primary care physician	-5.71*	-2.80*	0.91	-0.76	-4.39*	-2.64*	-1.47	-1.4
Home health	-3.06	-5.29*	4.34	4.77*	-6.16*	1.77	-2.04	1.56
Other non-facility	-3.99*	-2.76*	-4.45	-0.84	-1.90*	-2.49*	-3.00	-8.59*
Laboratory	-2.33*	-1.07*	-2.91	-0.69	-1.12*	-1.17*	-1.72	-2.83
Imaging	-3.03*	-2.89*	-0.53	-1.24*	-1.36*	-1.21*	-0.70	-0.85
Other facility	0.26	0.65	0.63	-0.53	-0.32	0.81	0.37*	0.14

(continued)

**Table 2-9 (continued)**  
**Comparison of average changes for Medicare expenditures and utilization rates:**  
**First 2 years of MAPCP Demonstration**

Outcome	Minnesota		Maine		Michigan		Pennsylvania	
	Vs. PCMH CG <sup>1</sup>	Vs. non-PCMH CG	Vs. PCMH CG	Vs non-PCMH CG	Vs. PCMH CG	Vs non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
Total Medicare	—	15.25	43.78	26.49	-83.43*	-17.09	-7.50	-28.66
Acute-care	—	10.03	15.50	13.39	-38.70*	-7.59	-7.08	-14.60
Post-acute-care	—	4.56	19.36	5.00	-18.66*	-10.33*	5.23	-1.79
ER	—	1.97*	-1.49	-3.45	-1.17	-0.36	-1.75	-0.95
Outpatient	—	10.88*	8.99	3.62	-2.87	10.12*	-7.18*	1.8
Specialty physician	—	-13.51*	-3.82	2.97	-12.18*	-4.72*	3.13	-7.71*
Primary care physician	—	-1.40	0.95	-0.59	-5.40*	-1.83	-0.16	-1.32
Home health	—	2.12	1.88	3.29	-1.58	0.39	1.29	-1.42
Other non-facility	—	0.17	-2.56	-0.63	-1.43	0.41	-1.31	-3.34*
Laboratory	—	0.29	-0.30	-0.22	-1.24	-1.98*	-2.04*	-2.27*
Imaging	—	-0.58	0.07	-0.38	-0.68	-0.25	-1.33	-0.77
Other facility	—	0.02	-0.14	0.22	-1.29	0.19*	-0.11	-0.40*

NOTES:

- All measures are PBPM expenditures.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG. It represents a weighted average of the differences observed in the first 8 quarters of the demonstration.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

<sup>1</sup> Minnesota does not have a PCMH CG because the HCH certification is so widespread that identifying sufficient numbers of non-HCH practices to create a PCMH CG is not possible.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 2-10**  
**Comparison of average changes for utilization rates:**  
**First 2 years of MAPCP Demonstration**

Outcome	New York		Rhode Island		Vermont		North Carolina	
	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
All-cause admissions (per 1,000 beneficiaries)	-8.81*	-4.01*	-3.38	2.82	0.51	0.82	-0.1	0.69
ER visits not leading to hospitalization (per 1,000 beneficiaries)	-0.61	-3.90	-5.55	0.19	15.73*	10.41*	5.33	-2.00

(continued)

**Table 2-10 (continued)**  
**Comparison of average changes for utilization rates:**  
**First 2 years of MAPCP Demonstration**

Outcome	Minnesota		Maine		Michigan		Pennsylvania	
	Vs. PCMH CG <sup>1</sup>	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG	Vs. PCMH CG	Vs. non-PCMH CG
All-cause admissions (per 1,000 beneficiaries)	—	-0.09	1.17	3.72	-8.00*	-1.19	-2.00	1.8
ER visits not leading to hospitalization (per 1,000 beneficiaries)	—	5.11	-12.50*	-10.14	2.64	2.45	-3.68	-1.72

## NOTES:

- All measures are rates per 1,000 person quarters.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries. It represents a weighted average of the differences observed in the first 8 quarters of the demonstration.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.

<sup>1</sup> Minnesota does not have a PCMH CG because the HCH certification is so widespread that identifying sufficient numbers of non-HCH practices to create a PCMH CG is not possible.

CG = comparison group; ER = emergency room; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

For the expenditure outcomes, *negative* estimates indicate that the average growth in expenditures between the baseline period and the end of Year Two was *slower* for beneficiaries assigned practices participating in the MAPCP Demonstration than for beneficiaries assigned to comparison practices. For the utilization rates, *negative* numbers indicate that, during the first 2 demonstration years, beneficiaries assigned to participating practices experienced a decrease in utilization relative to the comparison group. Conversely, positive numbers indicate that the growth in expenditures between the baseline period and Year Two was *greater* for beneficiaries assigned to participating practices than for beneficiaries assigned to comparison practices, or that, during the first 2 years of the MAPCP Demonstration, beneficiaries assigned to participating practices experienced an *increase* in utilization relative to the comparison group.

Based on the findings in **Table 2-9**, we reached the following conclusions about the association between the various state initiatives and expenditures through the second year of the MAPCP Demonstration. The state initiatives were associated with a slower rate of growth of total Medicare expenditures in only three of the eight MAPCP Demonstration states (Vermont, New York, and Michigan). There was stronger evidence, however, that initiatives were associated with slower growth in particular expenditure categories. Five states (New York, Vermont, Minnesota, Michigan, and Pennsylvania) had slower growth in specialty physician expenditures than did one or both of the comparison groups, and four states (New York, Vermont, Michigan, and Pennsylvania) had slower growth in laboratory expenses. Four states (New York, Vermont, North Carolina, and Pennsylvania) had slower growth in other non-facility expenditures, and three states (New York, Vermont, and Michigan) had slower growth in acute-care and primary care physician expenditures. Three states (New York, Rhode Island, and Vermont) had slower growth in imaging expenditures.

There was faster growth in some expenditure categories by demonstration beneficiaries relative to at least one of the comparison groups. Four states (New York, Vermont, Minnesota, and Michigan) expectedly had faster growth in outpatient expenditures, but faster growth in ER expenditures in three states (New York, Vermont, and Minnesota) did not align with the goals of the state initiatives.

Each state made efforts to reduced hospital admissions, ER visits, and readmissions. These efforts included greater access to primary care and greater care management, sometimes supported by ER alerts and other utilization reports for targeting. While interviewees in most states provided anecdotal evidence of reducing expensive unnecessary utilization, our analysis found hardly any evidence that the state initiatives were associated with reductions in utilization rates. The Adirondack Medical Home Demonstration (ADK Demonstration), Maine's PCMH Pilot, and the Michigan Primary Care Transformation Project (MiPCT) were exceptions. Our analysis estimated that the rate of all-cause admissions in New York was reduced relative to both comparison groups. A reduction in the rate of all-cause admissions was observed in Michigan relative to PCMH comparison practices. Maine had a reduction in ER visits not leading to hospitalization relative to its PCMH comparison practices. In Vermont, the rate of ER visits increased relative to both comparison practice groups. Differences between the beliefs expressed by some practices and the data analysis perhaps were due to practices' impact being less broad than they believed or practices failing to recognize that other factors also were decreasing utilization throughout the state, including for nondemonstration beneficiaries (e.g., the movement toward ACOs in Minnesota).

Some state initiatives attributed their inability to influence utilization of inpatient and ER services to being unable to target care management effectively because of lack of communication with hospitals and/or ERs and lack of actionable data. Interviewees also mentioned the general difficulty of getting patients to change their behavior in seeking care. The limited evidence of changes presented in this report also perhaps resulted from the relatively short evaluation period. Because strengthening of PCMH capacity, payment reforms, and other transformation activities took time to implement and become fully effective, more overall positive changes may emerge in the final report. Evidence of this was found in a greater number of statistically significant changes associated with the state initiatives when Year Two was analyzed alone.

### **2.5.5 Special Populations**

With few exceptions, MAPCP Demonstration states did not develop unique interventions tailored to special populations, such as African Americans, Hispanics, inner-city residents, Medicaid or Medicare beneficiaries, or dually eligible beneficiaries. Exceptions included Vermont, which targets older people living in supported housing (through the SASH program), and New York, which targets people living in rural areas by virtue of where the demonstration takes place (the Adirondacks). Information on special populations receiving targeted attention by the demonstration states and on whether they included other populations of policy interest is summarized in *Table 2-11*.

States generally argued that the goal of their PCMH initiatives is a person-centered transformation of primary care intended to meet the needs of all patients regardless of their ethnicity, race, insurance status, or rural/urban location. Thus, any special needs of specific populations would be addressed by the focus on patient-centered care. Instead of sociodemographic characteristics or program eligibility, most states focused on patients considered at high risk of unnecessary utilization and expenditures or at high risk of adverse outcomes. While states provided information about patients to participating practices that would enable them to target high-risk individuals, states did not prescribe which patients were to receive such interventions as care management.

*Table 2-12* reports the average changes in the growth in total Medicare expenditures for each of the eight MAPCP Demonstration states during Years One and Two combined for the following special populations: beneficiaries who were dually eligible for Medicare and Medicaid, beneficiaries eligible because of their disabilities, those with multiple chronic conditions, non-Whites, those living in a rural location, and beneficiaries with behavioral health conditions. For details about how these estimates were derived, see *Section 1.2.6*.

**Table 2-11**  
**MAPCP Demonstration special populations by state**

<b>Population</b>	<b>New York</b>	<b>Rhode Island</b>	<b>Vermont</b>	<b>North Carolina</b>	<b>Minnesota</b>	<b>Maine</b>	<b>Michigan</b>	<b>Pennsylvania</b>
Dually eligible beneficiaries	y	y	y	x	y	y	y	y
People with disabilities	y	y	y	x	y	y	y	y
Older people in supported housing	—	—	x	—	—	—	—	—
Beneficiaries with behavioral health issues	y	y	x	y	y	y	y	y
Beneficiaries with chronic conditions/multiple comorbidities/high risk	y	y	x	x	y	x	x	y
Beneficiaries in rural areas	y	—	y	y	y	y	y	—
Racial/ethnic groups (e.g., African Americans, Somalis, Hmong, Hispanics)	—	—	—	y	y	—	y	y
Children with asthma	y	—	y	y	y	y	y	y

NOTES:

- x = a special focus of the state with an enhanced or special intervention.
- y = not a group receiving an enhanced or special intervention, but a category of policy interest.

MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable.

**Table 2-12**  
**Comparison of average changes of MAPCP Demonstration on total Medicare expenditures among special populations of**  
**Medicare FFS beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Population	New York		Rhode Island		Vermont		North Carolina	
	PCMH CG	Non-PCMH CG	PCMH CG	Non-PCMH CG	PCMH CG	Non-PCMH CG	PCMH CG	Non-PCMH CG
Multiple chronic conditions	-67.27	-63.29	-99.82	15.28	-63.44	-108.94*	-55.61	-53.74
Behavioral health conditions	-56.25	-52.70	-28.73	2.75	-76.37	-60.86*	-50.82	-20.76
Disabled	-36.69*	-8.96	-35.11	12.18	32.16	-54.64*	-41.33	-30.85
Dually eligible	-9.32	5.94	-53.56	17.41	21.57	-46.79*	9.36	22.11
Non-White	—	—	-84.09	-7.77	—	—	-24.32	-58.22
Rural	4.62	43.78	—	—	55.50	-67.42*	-52.04	12.57

(continued)

**Table 2-12 (continued)**  
**Comparison of average changes of MAPCP Demonstration on total Medicare expenditures among special populations of**  
**Medicare FFS beneficiaries:**  
**First 2 Years of MAPCP Demonstration**

Population	Minnesota		Michigan		Maine		Pennsylvania	
	PCMH CG <sup>1</sup>	Non-PCMH CG	PCMH CG	Non-PCMH CG	PCMH CG	Non-PCMH CG	PCMH CG	Non-PCMH CG
Multiple chronic conditions	—	71.44	-266.33*	-104.65*	137.07	66.44	-25.14	-70.69
Behavioral health conditions	—	35.68	-80.91	-70.84*	26.94	24.94	-68.98*	-104.21
Dually eligible	—	14.00	-96.88*	-36.90	58.61	10.74	-8.92	1.38
Disabled	—	31.02	-78.58*	-3.79	-1.93	2.56	-8.27	-31.08
Non-White	—	-11.64	-192.32*	-5.56	25.13	-6.48	7.27	-1.88
Rural	—	-9.76	-110.83	-8.14	93.28	16.95	-148.49*	19.08

NOTES:

- All measures are PBPM total Medicare expenditures.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- <sup>1</sup> Minnesota does not have a PCMH CG because the HCH certification is so widespread that identifying sufficient numbers of non-HCH practices to create a PCMH CG is not possible.

CG = comparison group; FFS = fee-for-service; HCH = Health Care Homes; — = not applicable; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- For *dually eligible beneficiaries*, the MAPCP Demonstration was associated with significant *reductions in the growth* in total Medicare expenditures in two of the eight states:
  - Vermont, relative to non-PCMH comparison group practices
  - Michigan, relative to PCMH and comparison group practices
- For *Medicare beneficiaries eligible because of their disabilities*, the MAPCP Demonstration was associated with significant *reductions in the growth* in total expenditures in three of the eight states:
  - New York, relative to PCMH comparison group practices
  - Vermont, relative to non-PCMH comparison group practices
  - Michigan, relative to PCMH comparison group practices
- For Medicare beneficiaries with *multiple chronic conditions*, the MAPCP Demonstration was associated with significant *reductions in the growth* in total expenditures in two of the eight states:
  - Vermont, relative to non-PCMH comparison group practices
  - Michigan, relative to both PCMH and non-PCMH comparison group practices
- For *non-White beneficiaries*, the MAPCP Demonstration was associated with a significant *reduction in the growth* in total expenditures in Michigan compared to the PCMH comparison group.
- For *rural beneficiaries*, the MAPCP Demonstration was associated with significant *reductions in the growth* in total expenditures in two states:
  - Vermont, relative to non-PCMH comparison group practices
  - Pennsylvania, relative to PCMH comparison group practices
- For *beneficiaries with behavioral health conditions*, the MAPCP Demonstration was associated with significant *reductions in the growth* in total expenditures in three states:
  - Pennsylvania, relative to PCMH comparison group practices
  - Vermont and Michigan, relative to non-PCMH comparison group practices

**Table 2-13** summarizes a broad range of findings for people with multiple chronic conditions relative to other PCMH comparison group practices; **Table 2-14** presents a summary of findings in comparison with non-PCMH comparison group practices. In this analysis, the multiple chronic condition group was defined as beneficiaries with three or more chronic conditions present in 2 consecutive years of Medicare claims and who were in the high-risk category of the CMS Hierarchical Condition Category index (top quartile of predicted expenditures). Roughly one-fourth of Medicare beneficiaries in the demonstration met this definition.

To identify chronic conditions, we used the Chronic Condition Indicator algorithm developed by the Agency for Healthcare Research and Quality as part of the Healthcare Cost and Utilization Project (2015). The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one lasting 12 months or longer and meeting one or both of the following conditions: (a) limiting a person's ability to care for themselves, live independently, or interact with others; (b) requiring ongoing intervention with medical products, services, and/or special equipment.

As shown in **Table 2-13**, over the first 2 years, the MAPCP Demonstration was not associated with many statistically significant outcomes for ***people with multiple chronic conditions*** relative to other PCMH comparison group practices. In addition, there did not appear to be a consistent pattern in which outcomes most improved across the demonstration states, nor which states had the best outcomes. Out of the 25 outcomes measures, New York and Michigan scored the highest, with nine statistically significant outcomes, followed by Vermont with eight and Maine with seven. Rhode Island and Pennsylvania had two significant results each, and North Carolina had one. Several states' significant outcomes were in an unexpected direction (e.g., in Maine, the rate of PQI admissions was higher in the demonstration group relative to other PCMH comparison group practices).

As shown in **Table 2-14**, over the first 2 years, the MAPCP Demonstration was not associated with many statistically significant outcomes for ***people with multiple chronic conditions*** relative to non-PCMH comparison group practices. Again, there was no consistent pattern in which outcomes were most improved across the demonstration states, nor which states had the best outcomes. Out of the 25 outcomes measures, Michigan scored the highest with eight statistically significant outcomes (five of which were significant reductions in different categories of expenditures), followed by Vermont with seven and North Carolina with five. Minnesota and Pennsylvania had three significant results each, and New York, Rhode Island, and Maine had two each. The significant findings in Minnesota, Maine, Michigan, and Pennsylvania all favored the intervention, but significant findings in the other four states were more mixed (e.g., in Vermont, total, post-acute, and primary care expenditures were significantly reduced, but all-cause admissions and ER visits significantly increased).

In summary, states did not tailor their demonstrations to particular populations, arguing that the general patient-centered care inherent in primary care medical homes would be sufficient. States provided care management to medically complex patients. Quantitative analysis of preliminary data suggested that the MAPCP Demonstration was not consistently associated with statistically significant changes for any of the special populations examined. There was some evidence that state initiatives were associated with significant reductions in the rate of growth in Medicare expenditures in five of the eight MAPCP Demonstration states for at least one special population in each state, relative to either the PCMH comparison group practices or non-PCMH comparison group practices. No state, however, was markedly more effective in serving these subpopulations than others. The largest changes associated with the demonstration occurred among beneficiaries with multiple chronic conditions, where three of the eight states had some statistically significant results in reducing Medicare expenditure growth relative to either the PCMH comparison group practices or non-PCMH comparison group practices. Most states focused on this population, providing care management and other initiatives, but it was not clear that the interventions involved a large enough part of the population during the first 2 years

**Table 2-13**  
**Comparison of average changes of MAPCP Demonstration on selected outcomes among beneficiaries with multiple chronic conditions:**  
**Beneficiaries assigned to MAPCP Demonstration PCMHs and comparison PCMHs:**  
**First 2 years of MAPCP Demonstration**

Outcome	MAPCP Demonstration PCMHs vs. PCMH CG						
	New York	Rhode Island	Vermont	North Carolina	Maine	Michigan	Pennsylvania
Access to and coordination of care							
Primary care visits (per 1,000 beneficiary quarters)	ns	ns	ns	ns	ns	ns	+
Medical specialist visits (per 1,000 beneficiary quarters)	ns	ns	ns	ns	ns	ns	ns
Surgical specialist visits (per 1,000 beneficiary quarters)	+	+	ns	+	+	ns	ns
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)	ns	ns	+	ns	ns	ns	ns
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)	ns	ns	ns	ns	ns	—	ns
Expenditures by type							
Total Medicare	ns	ns	ns	ns	ns	—	ns
Acute-care	—	ns	ns	ns	ns	—	ns
Post-acute-care	ns	ns	—	ns	ns	—	ns
ER	+	ns	+	ns	ns	ns	ns
Outpatient	+	ns	+	ns	+	ns	—
Specialty physicians	—	ns	ns	ns	ns	—	ns
Primary care physician	—	ns	—	ns	ns	ns	ns
Utilization							
All-cause admissions	—	ns	ns	ns	+	—	ns
ER visits not leading to hospitalization (per 1,000 beneficiary quarters)	ns	ns	+	ns	ns	ns	ns

(continued)

**Table 2-13 (continued)**

**Comparison of average changes of MAPCP Demonstration on selected outcomes among beneficiaries with multiple chronic conditions:**

**Beneficiaries assigned to MAPCP Demonstration PCMHs and comparison PCMHs:  
First 2 years of MAPCP Demonstration**

Outcome	MAPCP Demonstration PCMHs vs. PCMH CG						
	New York	Rhode Island	Vermont	North Carolina	Maine	Michigan	Pennsylvania
Process of care indicators							
HbA1c testing	ns	ns	ns	ns	ns	ns	ns
Retinal eye examination	+	ns	ns	ns	ns	ns	ns
LDL-C screening	ns	ns	—	ns	ns	—	ns
Medical attention for nephropathy	ns	—	ns	ns	—	ns	ns
Received all 4 diabetes tests	ns	ns	—	ns	ns	ns	ns
Received none of the 4 diabetes tests	ns	ns	ns	ns	ns	+	ns
Total lipid panel	ns	ns	ns	ns	ns	—	ns
Health outcomes							
Avoidable catastrophic events	ns	ns	ns	ns	+	ns	ns
PQI admissions—overall	—	ns	ns	ns	+	ns	ns
PQI admissions—acute	ns	ns	ns	ns	ns	ns	ns
PQI admissions—chronic	ns	ns	ns	ns	+	ns	ns

**NOTES:**

(+) indicates the presence of a positive overall change estimate that is statistically significant at the 10 percent level. (–) indicates the presence of a negative overall change estimate that is statistically significant at the 10 percent level. “ns” indicates that the overall change estimate is not statistically significant.

<sup>1</sup> Minnesota does not have a PCMH CG because the HCH certification is so widespread that identifying sufficient numbers of non-HCH practices to create a PCMH CG is not possible.

CG = comparison group; ER = emergency room; HCH = Health Care Homes; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = prevention quality indicators.

**Table 2-14**  
**Comparison of average changes of MAPCP Demonstration on selected outcomes among beneficiaries with multiple chronic conditions:**  
**Beneficiaries assigned to MAPCP Demonstration PCMHs and comparison non-PCMHs:**  
**First 2 years of MAPCP Demonstration**

Outcome	MAPCP Demonstration PCMHs vs. non-PCMH CG							
	New York	Rhode Island	Vermont	North Carolina	Minnesota	Maine	Michigan	Pennsylvania
Access to and coordination of care								
Primary care visits (per 1,000 beneficiary quarters)	ns	ns	ns	ns	ns	ns	ns	+
Medical specialist visits (per 1,000 beneficiary quarters)	ns	ns	ns	—	ns	ns	ns	ns
Surgical specialist visits (per 1,000 beneficiary quarters)	ns	ns	ns	+	ns	ns	ns	ns
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)	ns	ns	ns	ns	ns	ns	+	+
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)	ns	ns	ns	ns	ns	ns	ns	ns
Expenditures by type								
Total Medicare	ns	ns	—	ns	ns	ns	—	ns
Acute-care	ns	ns	ns	ns	ns	ns	—	ns
Post-acute-care	ns	ns	—	ns	ns	ns	—	ns
ER	ns	+	ns	ns	ns	ns	ns	ns
Outpatient	ns	ns	ns	ns	ns	ns	ns	ns
Specialty physicians	—	ns	ns	ns	—	ns	—	ns
Primary care physician	ns	ns	—	ns	ns	ns	—	ns

(continued)

**Table 2-14 (continued)**

**Comparison of average changes of MAPCP Demonstration on selected outcomes among beneficiaries with multiple chronic conditions:**

**Beneficiaries assigned to MAPCP Demonstration PCMHs and comparison non-PCMHs  
First 2 years of MAPCP Demonstration**

Outcome	MAPCP Demonstration PCMHs vs. non-PCMH CG							
	New York	Rhode Island	Vermont	North Carolina	Minnesota	Maine	Michigan	Pennsylvania
Utilization								
All-cause admissions	ns	ns	+	ns	ns	ns	ns	ns
ER visits not leading to hospitalization (per 1,000 beneficiary quarters)	ns	ns	+	ns	ns	ns	ns	ns
Process of care indicators								
HbA1c testing	ns	+	ns	ns	ns	ns	ns	ns
Retinal eye examination	ns	ns	ns	ns	ns	+	ns	ns
LDL-C screening	ns	ns	ns	ns	ns	ns	ns	ns
Medical attention for nephropathy	+	ns	ns	ns	+	ns	ns	+
Received all 4 diabetes tests	ns	ns	ns	ns	+	+	ns	ns
Received none of the 4 diabetes tests	ns	ns	ns	—	ns	ns	ns	ns
Total lipid panel	ns	ns	—	ns	ns	ns	ns	ns
Health outcomes								
Avoidable catastrophic events	ns	ns	ns	—	ns	ns	—	ns
PQI admissions—overall	ns	ns	+	ns	ns	ns	ns	ns
PQI admissions—acute	ns	ns	ns	+	ns	ns	—	ns
PQI admissions—chronic	ns	ns	ns	ns	ns	ns	ns	ns

**NOTES:**

(+) indicates the presence of a positive overall change estimate that is statistically significant at the 10 percent level. (–) indicates the presence of a negative overall change estimate that is statistically significant at the 10 percent level. “ns” indicates that the overall change estimate is not statistically significant.

CG = comparison group; ER = emergency room; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = prevention quality indicator.

to be associated with changes in the quantitative outcomes. Given that the states did not tailor their interventions to these populations, the lack of positive findings for subpopulations was not unexpected.

## 2.6 Budget Neutrality in Year Two of the MAPCP Demonstration

**Table 2-15** summarizes budget neutrality results for the eight MAPCP Demonstration states after Year Two. The methods used for calculating budget neutrality are described in detail in **Section 1.2.7**. This effect quantifies the change in Medicare expenditures among beneficiaries assigned to MAPCP Demonstration PCMHs relative to beneficiaries assigned to PCMHs<sup>3</sup> in the comparison group not participating in the MAPCP Demonstration.

**Table 2-15**  
**Estimates of gross savings, MAPCP Demonstration fees paid, and net savings:**  
**Year Two of MAPCP Demonstration**

State	MAPCP Demonstration states		Total MAPCP Demonstration fees	Net savings in Years One and Two	Return on fee investment
	Eligible beneficiary quarters in Years One and Two	Gross savings in Years One and Two			
New York	157,032	\$12,637,119*	\$3,258,078	\$9,379,041	3.88
Rhode Island	60,214	\$5,795,880	\$1,009,374	\$4,786,506	5.74
Maine	247,558	-\$32,518,083	\$7,238,571	-\$39,756,696	-4.49
Minnesota	106,616	-\$19,553,595	\$1,258,309	-\$20,811,903	-15.54
North Carolina	152,322	\$9,955,916	\$4,166,490	\$5,789,426	2.39
Michigan	1,518,542	\$380,069,806*	\$43,964,835	\$336,104,971*	8.64
Pennsylvania	217,997	\$4,906,765	\$3,916,170	\$990,594	1.25
Vermont	381,814	\$35,699,155	\$8,603,828	\$27,095,327	4.15
Total	2,842,095	\$396,992,963	73,415,655	\$323,577,266	5.41

**NOTES:**

- Eligible beneficiary quarters: Sum of the number of eligible demonstration beneficiaries in each quarter of the demonstration to date. Eligible quarters are weighted by the eligibility fraction and exclude beneficiaries with fewer than 3 months of eligibility.
- Gross savings: A weighted average of the quarterly per beneficiary differences in expenditures associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. A positive number indicates total gross savings. A negative number indicates a gross loss.
- Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees paid out for all eligible beneficiary quarters.
- Net savings: Total gross savings minus total MAPCP Demonstration fees paid.
- Return on investment: Gross savings divided by total fees.

MAPCP = Multi-Payer Advanced Primary Care Practice.

\* Statistically significant at the 10 percent level. Only gross and net savings were tested for statistical significance. Statistical testing was done only at the state level. Statistical significance cannot be determined for the total of gross or net savings across all states.

<sup>3</sup> In Minnesota, due to the absence of a PCMH comparison group budget neutrality is estimated relative to non-PCMH practices.

While six of the eight states had positive gross savings and a return on investment (RoI) greater than one, there were only two states, Michigan and New York, where estimates of gross savings were statistically significant. In Michigan, gross savings and RoI were estimated at \$380,069,806 and 8.64 respectively. In New York, gross savings and RoI were estimated at \$12,637,119 and 3.88 respectively. After accounting for demonstration fees, however, only Michigan exhibited a statistically significant estimate of net savings. In Michigan, net savings were estimated at \$336,104,971.

## **2.7 Potential Future Issues for States, CMS, and Federal Evaluators**

In Year One, states described a variety of challenges in their efforts to implement the MAPCP Demonstration, including attrition of payers and practices in Pennsylvania, general lack of enthusiasm by practices as “change fatigue” increased, low rates of billing for care coordination services in Minnesota due to a challenging billing process, lower than expected panel sizes due to attribution methodologies, and concerns by payers about a lack of RoI. In Year Two, these same challenges continued, and additional concerns were raised. These challenges are detailed in the appropriate state chapter in this report; we briefly summarize the issues here.

Pennsylvania saw continued attrition of both payers and practices. The lack of demonstrated shared savings among practices participating in Pennsylvania’s Chronic Care Initiative (CCI) further eroded support and enthusiasm, and more practices pulled out of the MAPCP Demonstration in Year Two. New York also reported a general lack of enthusiasm among practices, although they continued to participate. Across the MAPCP Demonstration states, payers, both commercial and Medicaid, worried about the lack of evidence of a positive RoI, and some payers noted that sustaining participation in this demonstration would be difficult if data to assess RoI were not provided in the near future. Minnesota still reported few practices billing for care coordination services, and, although the state took steps to address some of the challenges, billing remained low.

In Year Two, Maine expanded its PCMH Pilot to 50 additional primary care practices. Vermont also added more practices to its initiative to increase the number of individuals participating in the MAPCP Demonstration. This was of particular note because the pool of potential PCMH comparison group practices became more limited as former comparison group practices joined the MAPCP Demonstration. Two states, Maine and Michigan, had implementation challenges in integrating care management services and/or CCTs into their existing programs. Maine also rolled out a Medicaid health home initiative, and its process for assigning Medicaid beneficiaries to a health home resulted in some Medicaid beneficiaries participating in the MAPCP Demonstration no longer receiving care management services for a period of time. These challenges were associated with general disruption to practices that were still trying to find the most efficient and effective ways to provide care under the medical home model.

Almost all states discussed a shift toward other models of payment reform, including ACOs sponsored by commercial payers, Medicare, and/or Medicaid, and delivery system reform under SIM grants. Practices and state officials alike expressed uncertainty about how this primary-care-based medical home initiative would integrate into these other initiatives. Finally, some states and their participating practices expressed concern about sustaining the medical

home initiative beyond the end of Medicare’s participation. Without Medicare “at the table,” there was concern that the coalitions and partnerships built around this initiative would falter.

All of these overarching issues will continue to be monitored for resolution or change in Year Three of the MAPCP Demonstration.

## CHAPTER 3 NEW YORK

In this chapter, we present qualitative and quantitative findings related to the implementation of the Adirondack (ADK) Medical Home Demonstration, New York's preexisting regional multi-payer initiative, which added Medicare as a payer to implement the MAPCP Demonstration. We report qualitative findings from our second of three annual site visits to New York, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the association of the demonstration with changes in the five outcome domains described in *Section 1.1.2*. We also report characteristics of practices participating in the state initiative.

For the second site visit, which occurred November 6 through 8, 2013, four teams traveled throughout the Adirondack region, covering the Tri-Lakes Pod region (Pod 1), Lake George Pod region (Pod 2), Northern Adirondack Pod region (Pod 3), and Albany and the surrounding metro area. The site visit focused on changes and implementation experiences occurring since the last site visit in October 2012. During the site visit, we interviewed physicians, mid-level providers (e.g., nurse practitioners, physician assistants), nurses, care managers, and administrators from participating patient-centered medical homes (PCMHs) and collaborating organizations, including Pod administrators and staff from the Adirondack Health Institute, Inc. (AHI), a provider support organization. We sought to learn about the perceived effects of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's entrance. We met with key state officials involved with the ADK Demonstration to learn how the payment model and other efforts to support practice transformation, such as learning collaboratives, progressed and if any changes were made to meet performance goals. We also met with payers to learn about their experiences with implementation and whether or not the payments to practices were effective in producing desired outcomes or whether modifications were warranted. Last, we met with representatives of a key provider organization to learn if they had observed improvements in beneficiary experience with care and any changes to the delivery of care.

This chapter is organized by major evaluation domains. *Section 3.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in the ADK Demonstration. *Section 3.2* reports practice transformation activities. Subsequent sections report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 3.3*); access to care and coordination of care (*Section 3.4*); beneficiary experience with care (*Section 3.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 3.6*); and special populations (*Section 3.7*). The chapter concludes with a discussion of the findings (*Section 3.8*).

### 3.1 State Implementation

In this section, we present findings related to the implementation of the ADK Demonstration and changes made by the state, practices, and payers in the second year of its MAPCP Demonstration. We focus on providing information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?
- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors are affecting implementation?

The state profile in *Section 3.1.1*, which describes the current status of major features of the state's initiative and the context in which it operated, drew on a variety of sources, including quarterly reports submitted to CMS by ADK Demonstration project staff; monthly state-CMS calls; news articles; state and federal Web sites; and the site visit conducted in November 2013. *Section 3.1.2* presents a logic model reflecting our understanding of the link between specific elements of the ADK Demonstration and expected changes in outcomes. *Section 3.1.3* presents key findings gathered from the site visit and describes the implementation experience of state officials, payers, and providers during the second year of the MAPCP Demonstration. We conclude this section with lessons learned during the first 2 years of the MAPCP Demonstration (*Section 3.1.4*).

### **3.1.1 New York Profile as of November 2013 Evaluation Site Visit**

New York implemented the MAPCP Demonstration by adding Medicare as a payer to the preexisting ADK Demonstration. The ADK Demonstration is a regional initiative in northeastern New York that began in 2005 as a collaboration among local practices seeking to strengthen the region's beleaguered primary care system, with a specific focus on recruiting and retaining primary care physicians practicing in rural communities. As these efforts grew, the New York State Association of Counties convened a 2007 Adirondack Healthcare Summit, at which planning began for a structured regional demonstration program. Early project support came from an \$85,000 Rural Health Networking grant from the Health Resources and Services Administration, financial support from the National Association for Community Health Centers and the New York State Medical Society, and grant-supported practice transformation consulting from EastPoint Health. The New York legislature formally recognized the ADK Demonstration in statute in 2009. The ADK Demonstration officially began on January 1, 2010; Medicare began participating on July 1, 2011.

**State environment.** The New York State Department of Health (NYS DOH) provided executive leadership for the ADK Demonstration. The state is also designated as a supervisor to provide immunity under the state action immunity doctrine, allowing payers to participate in anticompetitive practices for the ADK Demonstration. The not-for-profit AHI provided program oversight in various roles, which include monitoring practice performance, aggregating clinical and financial data, planning for long-term sustainability, and serving as the central hub for subregional care management activities. The 15-member multi-stakeholder Governance Council advises and guides AHI.

New York has a number of programs operating in the ADK Demonstration area and across the state that may influence health outcomes for participants in the MAPCP Demonstration or comparison group populations:

- Three Section 2703 Health Home State Plan Amendments phased in health home services for Medicaid and beneficiaries dually eligible for Medicare and Medicaid across the state. The first state plan amendment, which included the ADK Demonstration counties, was effective January 1, 2012.
- The New York Capital District-Hudson Valley Region was selected to participate in the Center for Medicare & Medicaid Innovation Comprehensive Primary Care initiative. Medicare also participated in this multi-payer initiative.
- New York received a State Demonstration to Integrate Care for Dual Eligible Individuals award. The demonstration more effectively integrates Medicaid and Medicare services using capitated managed long-term care. New York signed a Memorandum of Understanding with CMS on August 26, 2013, and enrollment began in July through September 2014.
- New York has a statewide Medicaid-only PCMH program, which provides incentive payments to practices with National Committee for Quality Assurance (NCQA) Physician Practice Connections (PPC®) PCMH™ recognition. Practices participating in the ADK Demonstration are excluded, but PCMH comparison practices could receive incentive payments.
- New York has a CMS Community-Based Care Transitions Program, which seeks to improve care transitions from the hospital to other care settings and reduce readmissions for Medicare beneficiaries.
- The NYS DOH awarded a \$7 million capital grant to ADK Demonstration staff in August 2009 to support electronic health record (EHR) implementation. The grant also supported interoperability of physician practices, hospitals, the Quality Data Center (QDC) and Treo claims databases. Participating providers contributed more than \$7 million in matching funds. The nonprofit Regional Health Information Organization (RHIO), named Hixny, supports the ADK Demonstration.
- New York has numerous existing public health and disease prevention activities, including diabetes prevention, the Healthy Heart Program, and the Chronic Disease Self-Management program.
- New York received a pretesting award through the State Innovation Models (SIM) initiative. The \$1 million award helped the state further develop and refine its care innovation plan, which included delivery system and data infrastructure improvements. The centerpiece of the plan is a new three-tiered advanced primary care model, in which each tier included increasing capabilities to coordinate beyond the medical home with specialists, hospitals, and behavioral health treatment.

**Demonstration scope.** The ADK Demonstration is limited to practices in Clinton, Essex, Franklin, and Hamilton counties (an area of approximately 7,000 square miles bordering Canada and Vermont) and select federally qualified health centers (FQHCs) in Saratoga, Warren, and

Washington counties. The participating practices are grouped into three geographical “Pods”: Lake George, Tri-Lakes, and Northern Adirondacks. Each Pod, described as a “mini disease management company,” supports practices in its sub-region with shared services for patient outreach, health education, self-management, community resource integration, and care coordination.

**Table 3-1** shows participation in the New York ADK Demonstration at the end of the first and second years of the demonstration. The number of participating practices with attributed Medicare FFS beneficiaries decreased by 5.1 percent between the end of Year One (June 30, 2012) and the end of Year Two (June 30, 2013), from 39 to 37. In contrast, the number of providers at these practices increased by 5 percent between the end of Year One and the end of Year Two, from 180 to 189. The cumulative number of Medicare FFS beneficiaries who had participated in the demonstration for 3 or more months was 21,441 at the end of the first year, and 24,771 at the end of the second year—an increase of 16 percent.

**Table 3-1**  
**Number of practices, providers, and Medicare fee-for-service beneficiaries**  
**participating in the New York Adirondack Medical Home Demonstration**

Participating entities	Number as of June 30, 2012	Number as of June 30, 2013
ADK Demonstration practices <sup>1</sup>	39	37
Participating providers <sup>1</sup>	180	189
Medicare FFS beneficiaries <sup>2</sup>	21,441	24,771

NOTES:

- ADK Demonstration practices include only those practices with attributed Medicare FFS beneficiaries, and participating providers are the providers that are associated with those practices.
- The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries ever assigned to participating ADK Demonstration practices and participating in the ADK Demonstration for at least 3 months.

ADK = Adirondack; ARC = Actuarial Research Corporation; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCES: <sup>1</sup>ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

In terms of all-payer participants, the state originally projected that a total of 113,609 individuals would participate in the ADK Demonstration. The state reported that 94,690 individuals enrolled by the end of Year One (June 30, 2012), and 100,809 by the end of Year Two (June 30, 2013). This represented an increase of 6,119 total participants, or 6.5 percent.

As of June 30, 2013, nine payers were participating: Medicare, FFS Medicaid, the state employee health plan, and six commercial payers. The commercial payers include both fully insured and administrative services-only plans. Participating payers use a mix of attribution and assignment methodologies, although the commercial plans agreed to attribute patients using a specific set of evaluation and management procedure codes. Fidelis, the Medicaid managed care plan, does not attribute patients because all of their patients are assigned to a primary care provider. Because of the implementation of mandatory Medicaid managed care in the region, a

large percentage of Medicaid FFS beneficiaries in the ADK Demonstration have shifted to the region's participating Medicaid managed care plans throughout the MAPCP Demonstration period.

**Table 3-2** displays the characteristics of Adirondack-area practices with attributed Medicare FFS beneficiaries participating in the New York ADK Demonstration as of June 30, 2013. There were 37 participating practices with an average of 5 providers per practice. Most of these practices were office-based (60%), and more than one-third (38%) were FQHCs. These practices were located in a mixture of metropolitan (24%), micropolitan (54%), and rural (22%) areas.

**Table 3-2**  
**Characteristics of practices participating in the New York Adirondack Medical Home Demonstration as of June 30, 2013**

Characteristic	Number or percent
Number of practices (total)	37
Number of providers (total)	189
Number of providers per practice (average)	5
Practice type (%)	
Office-based practice	60
Federally qualified health center	38
Critical access hospital	2
Rural health clinic	0
Practice location type (%)	
Metropolitan	24
Micropolitan	54
Rural	22

SOURCE: Actuarial Research Corporation Q8 Multi-Payer Advanced Primary Care Practice Demonstration Provider File. (See Chapter 1 for more detail about this file.)

In **Table 3-3**, we report demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating ADK Demonstration practices during the first 2 years of the MAPCP Demonstration (July 1, 2011 to June 30, 2013). Beneficiaries with fewer than 3 months of eligibility for the MAPCP Demonstration were not included in our evaluation or this analysis. Of the beneficiaries assigned to ADK Demonstration practices during the first 2 years of the MAPCP Demonstration, 24 percent were under the age of 65. Forty-two percent were between the ages of 65 and 75, 26 percent were between the ages of 76 and 85, and 10 percent were older than 85, with a mean beneficiary age of 69 years. Beneficiaries were almost all White (98%), and 28 percent were categorized as urban-dwelling (according to the 2010 United States Census, two of the four counties in the ADK Demonstration were part of either a Metropolitan or Micropolitan Statistical Area), and 56 percent were female. Twenty-four percent of beneficiaries were dually eligible for Medicare and Medicaid, and 32 percent were eligible for Medicare originally because of a disability. Only 1 percent of beneficiaries had end-stage renal disease (ESRD) and less than 1 percent resided in a nursing home during the year before their assignment to an ADK Demonstration practice.

**Table 3-3**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries**  
**participating in the New York Adirondack Medical Home Demonstration from**  
**July 1, 2011, through June 30, 2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	24,771
Demographic characteristics	
Age < 65 (%)	24
Ages 65–75 (%)	42
Ages 76–85 (%)	25
Age > 85 (%)	10
Age (mean)	69
White (%)	98
Urban place of residence (%)	28
Female (%)	56
Dual eligibles (%)	24
Disabled (%)	32
End-stage renal disease (%)	1
Institutionalized (%)	0
Health status	
Mean HCC score groups	1.03
Low risk (< 0.48) (%)	24
Medium risk (0.48–1.25) (%)	52
High risk (> 1.25) (%)	24
Mean Charlson Index score	0.79
Low Charlson Index score (= 0) (%)	63
Medium Charlson Index score ( $\leq 1$ ) (%)	19
High Charlson Index score (> 1) (%)	19
Chronic conditions (%)	
Heart failure	4
Coronary artery disease	13
Other respiratory disease	12
Diabetes without complications	16
Diabetes with complications	3
Essential hypertension	33
Valve disorders	3
Cardiomyopathy	1
Acute and chronic renal disease	6
Renal failure	3
Peripheral vascular disease	2
Lipid metabolism disorders	20
Cardiac dysrhythmias and conduction disorders	10
Dementias	1
Strokes	1

(continued)

**Table 3-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries**  
**participating in the New York Adirondack Medical Home Demonstration from**  
**July 1, 2011, through June 30, 2013**

Demographic and health status characteristics	Percentage or mean
Chronic conditions (%) (continued)	
Chest pain	5
Urinary tract infection	4
Anemia	6
Malaise and fatigue (including chronic fatigue syndrome)	2
Dizziness, syncope, and convulsions	5
Disorders of joint	6
Hypothyroidism	6

**NOTES:**

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria. Percentages may not add up to 100 because of rounding.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to a patient-centered medical home after the start of the demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid.

HCC = Hierarchical Condition Category; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: Medicare claims files.

Using three different measures—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions—we describe beneficiaries' health status during the year before their assignment to an ADK Demonstration practice. Beneficiaries had a mean HCC score of 1.03, meaning that beneficiaries participating in the ADK Demonstration were 3 percent sicker than an average Medicare FFS beneficiary, or, in other words, were predicted to be 3 percent more costly than the average Medicare FFS beneficiary in the year before their assignment to an ADK Demonstration practice. Beneficiaries had an average score on the Charlson Comorbidity Index of 0.79. Sixty-three percent of beneficiaries had a low (zero) score, meaning that they did not receive medical care for any of the 18 clinical conditions in the index in the year before their assignment to an ADK Demonstration practice.

The most common chronic conditions diagnosed among the Medicare FFS beneficiaries were hypertension (33%), lipid metabolism disorders (20%), diabetes without complications (16%), coronary artery disease (13%), other respiratory disease (12%), and cardiac dysrhythmias and conduction disorders (10%). Less than 10 percent of beneficiaries were treated for any of the other chronic conditions.

**Provider expectations.** New York required all participating providers to obtain Level 2 or Level 3 NCQA PPC® PCMH™ recognition within 12 months of joining the ADK Demonstration, although this was extended to 18 months for some practices. Every participating practice met this requirement under the 2008 NCQA PPC® PCMH™ standards; all but one achieved Level 3 recognition. New York also required practices to meet the following criteria:

- Use an electronic prescribing system within 7 months of the program's start.
- Participate in a disease registry and develop data reporting capabilities to enable reporting on access to care, clinical processes, clinical outcomes, and patient experience of care, using common metrics and methods.
- Offer expanded access, including 24/7 telephonic access.
- Provide same-day scheduling for urgent care.

**Support to practices.** Commercial payers, Medicaid FFS, and Medicaid managed care plans began payments to participating practices on June 1, 2010 (retroactive to January 1, 2010). Medicare FFS payments began just over one year later, on July 1, 2011. In total, participating payers make an additional \$84 in payments per member per year for each patient participating in the ADK Demonstration, equivalent to \$7 per member per month (PMPM). Payers have the option of making this payment through either an enhanced visit rate subject to reconciliation or through a separate recurring payment. New York gave payers the discretion to decide the frequency of recurring payments (e.g., monthly, quarterly, semiannually).

Providers agreed to a payment arrangement in which one-half of the \$7 PMPM payment is kept by the practices and the other half is split between the Pods and AHI. New York's MAPCP Demonstration application noted that, as a monthly payment, \$3 would go to the Pod and \$0.50 would go to AHI. Each Pod implemented the payment methodology somewhat differently to complement the structure of their Pod.<sup>1</sup>

In late 2012, stakeholders agreed to add a \$0.50 pay-for-performance component to the payment methodology beginning in January 2013. The \$0.50 incentive is paid out of the existing \$7 PMPM fee, and the incentive payments are based on performance in following areas: member satisfaction; utilization (admission rates, preventable emergency room (ER) visits, and readmissions); and the development of a practice improvement plan. Between July 1, 2011, and June 30, 2012, practices (including the portions received by AHI and the Pods) received a total of \$1,603,805 in Medicare MAPCP Demonstration payments for beneficiaries assigned to their practices during the first year of the demonstration. From July 1, 2011, to June 30, 2013, ADK Demonstration practices received a total of \$3,261,380 in Medicare MAPCP Demonstration payments.

Pod teams, in conjunction with health plans, are working across practices in their area to administer shared services for patient outreach, education, self-management, community-based resource integration, and care coordination. Although the structure and size of each Pod team is unique, all of the teams include an administrative director, a clinical care management leader, nurses, pharmacists, social workers, and health educators.

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<sup>1</sup> In Pod 1 (Tri-Lakes), practices receive the \$7 PMPM, pay \$0.50 PMPM to AHI and purchase care management services from the Adirondack Medical Center. In Pod 2 (Lake George), Hudson Headwaters Health Network, which employs the providers and care managers, receives the full payment and pays \$0.50 PMPM to AHI. In Pod 3 (Plattsburgh), \$4 PMPM goes to the practices, who pay \$0.50 PMPM to AHI, and \$3.50 goes to the Pod.

Multiple sources provide data to support providers and aggregate performance reporting. Hixny worked collaboratively with the Massachusetts e-Health Collaborative (MAeHC) and the providers' seven EHR vendors to build a physical infrastructure for clinical quality data storage and sharing. Hixny uploads EHR data daily, and data are held in a data warehouse (QDC) housed by MAeHC. The QDC provides a dashboard functionality on providers' clinical quality of care performance data. Additionally, Treo Solutions manages the program's all-payer claims database (APCD). The APCD and data warehouse provide data to allow participating practices, health plans, and the Pods to identify gaps in care, manage patient's chronic diseases, and support case management.

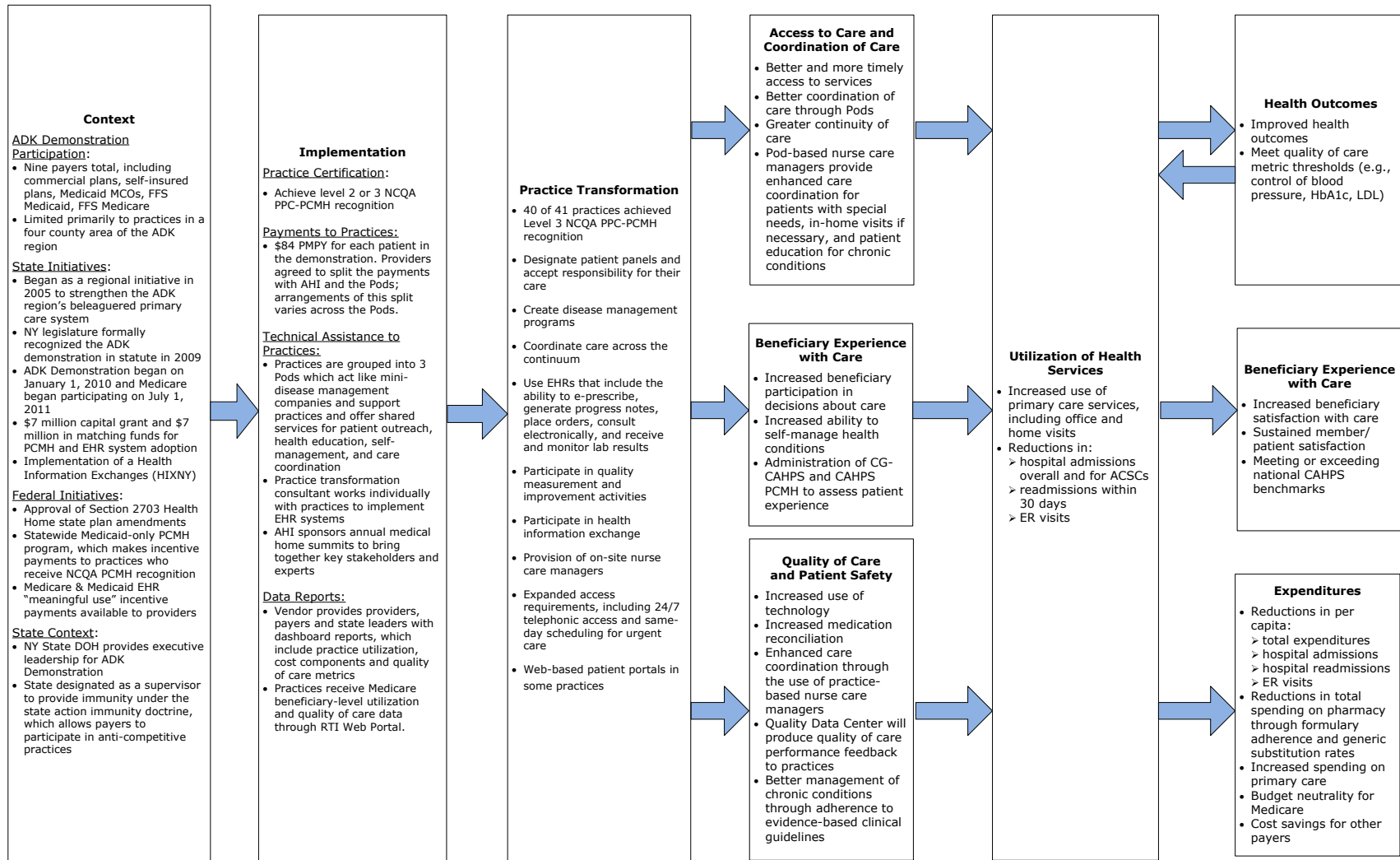
Treo Solutions also provided feedback reports (known as the Adirondack Region Medical Home Dashboard) to practices, Pod administrators, payers, and lead state officials using an electronic system that aggregated utilization and expenditure data at the Pod, practice, and provider level. The dashboard included patient survey data, utilization measures from the claims data warehouse (including Medicare FFS data provided by CMS), and expenditures from EHRs. Practices use patient-specific data for quality improvement.

### **3.1.2 Logic Model**

*Figure 3-1* portrays a logic model of New York's ADK Demonstration. The first column describes the context for the ADK Demonstration, including the scope, other state and federal initiatives, and the key features of the state context that affect the ADK Demonstration. The ADK Demonstration context informs implementation. Implementation incorporates a number of strategies to promote transformation of practices to PCMHs. Beneficiaries in these NCQA recognized Level 2 and 3 practices are expected to have better access to care and more coordinated care; to receive safer, higher quality care; and to be more engaged in decision-making about their care and management of their health conditions. These improvements are expected to promote more efficient utilization patterns, including increased use of primary care services and reductions in inpatient admissions, readmissions within 30 days after discharge, and ER visits. These changes in utilization patterns are expected to produce improved health outcomes, which can, in turn, reduce utilization, increase beneficiary satisfaction with care, and reduce total per capita expenditures, resulting in budget neutrality for the Medicare program and cost savings for other payers in the ADK Demonstration.

**Figure 3-1**  
**Logic model for New York ADK Demonstration**

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ADK: Adirondack; DOH: Department of Health; MCO: managed care organizations; FFS: fee-for-service; PMPY: per member per year; NCQA: National Committee for Quality Assurance; AHI: Adirondack Health Institute; ACSC: ambulatory care sensitive conditions; LDL: low density lipoprotein; EHR: electronic health record; CG-CAHPS: Consumer Assessment of Healthcare Providers and Systems Clinician & Group Survey; ER: emergency room; PPC-PCMH: Physician Practice Connections-Patient Centered Medical Home; PCMH: patient centered medical home; HbA1c: hemoglobin A1c

### 3.1.3 Implementation

This section uses primary data gathered from the site visit to New York in November 2013, and other sources, to present key findings on the implementation experience of state officials, payers, and providers to address the evaluation questions described in *Section 3.1*.

#### Major Changes During the Second Year

**Initiative expansion.** No practices were added during the second year of the MAPCP Demonstration in New York.

**Payment and attribution changes.** One of the most significant changes since the 2012 site visit was the implementation of a pay-for-performance component within the ADK Demonstration's payment methodology. From the \$7 PMPM, \$.50 is set aside for a pay-for-performance program. The payers played a critical role in designing the pay-for-performance component of their PMPM, but providers shared responsibility for determining the amount withheld. While the \$.50 withheld was perceived as a nominal figure to some interviewees—one payer called it a “token gesture”—a provider association interviewee said that the amount is “a start” and mentioned that it is an opportunity for providers to “really think about, in concrete terms, how those outcomes will ultimately, down the road, influence their buck.” One state official also discussed the influence pay-for-performance is likely to have on future reforms in the region and across the state: “It’s just a prelude to wherever it is that we’re going next year and the years after in terms of payment reform.”

Second, there have been two minor changes to the attribution methodology. First, payers agreed to add two new evaluation and management procedure codes. The second change, which was in the process of being implemented during the second round of site visits, is the addition of immunization administration codes to ensure that primary care physicians are credited for some patients attributed to the participating practice who may also be attributed to urgent care facilities because of their frequent utilization at these facilities. This issue only affected participating payers that attribute patients to urgent care facilities.

**Changes to project leadership.** A noticeable structural change in the second year of the MAPCP Demonstration was that AHI has taken on a greater leadership role from the state over the past year. One state policy interviewee noted that, “AHI has taken up more responsibility in terms of the running of the [ADK] Demonstration and particularly the relationship to the Pods and ultimately to the practices.” A Pod representative also discussed how AHI was working to “make things more uniform.” However, the state still serves as the convener during meetings and serves as the mediator when disputes arise. As the state official said, “I can’t close my door on this quite yet.”

**Tempered enthusiasm among participating practices.** There was less enthusiasm among the practices about being part of the ADK Demonstration than was observed during the 2012 site visit, although this differed somewhat by Pod region. Practices in Pods 1 and 3 exhibited some complacency and disenchantment with the ADK Demonstration over the past year, compared to practices in Pod 2. Practices in the Northern Adirondacks (Pod 3) and Tri-Lakes (Pod 1) regions are smaller than those in the Pod 2 region, often solo practitioners or small groups with no more than two or three providers on staff. These practices described fatigue

resulting from the demands of providing direct patient care and adhering to medical home standards with limited staff and resources.

## **Major Implementation Issues During the Second Year**

**Pay-for-performance payment distributions.** New York experienced two significant implementation delays over the past year. First, pay-for-performance payments were expected to be distributed to practices beginning in 2013, but the payments were delayed to an unspecified date in 2014. Stakeholders provided multiple reasons for the delay, including the fact that it took longer than expected for them to agree on which measures should determine the payments. There were also concerns about the quality and timeliness of the data that would be used to determine the distribution. As one payer observed, “Doctors don’t want to put money on the line if they don’t trust the metrics they will be paid on.” Second, New York expected United Healthcare’s Community Health Plan (a Medicaid managed care plan) to join the ADK Demonstration and begin making payments on October 1, 2012, but contract issues caused delays. The plan still had not made payments as of December 31, 2013. United Healthcare signed a Data Use Agreement in the second quarter of 2013, so the plan was expected to begin payment distributions in 2014, retroactive for the entire performance period.

Attribution remains an issue for participating payers, most notably one payer that manually reconciled its attribution list with the individuals for which practices expect payment. This payer reported that a manual process could introduce errors and that formatting inconsistencies were one of the primary factors that exacerbated the issue: “The data we get is often not in the same format.... The database will never match [and] I am doing the data cleaning myself.” The payer further reported, “There is a perception [by practices] that we don’t want to pay,” but the process made it difficult to reconcile. Although the payer did not discuss intending to modify or automate their process in 2014, they claimed that payers using enhanced visit rates had fewer problems. However, use of enhanced visit rates, however, posed its own challenges: a payer using enhanced visit rates reported having to adjust the fee schedule every 6 months because of fluctuations in the claims volume. Further, some payments for providers had to be redistributed for those who fell above or below the agreed-upon \$7 PMPM. Despite these difficulties, one Pod staff member reported that attribution improved in the past year, although acknowledging the challenge that came with open enrollment: “If a patient changes insurance on January 1, we’re not going to pick them up until the second [half] of the year [and] the physician will not get paid for the first 6 months.” This was due to delays in when the patient qualified for attribution under the new payer.

## **External and Contextual Factors Affecting Implementation**

**Regional and other state initiatives targeting care improvement.** The major contextual factor affecting implementation of the ADK Demonstration was that New York State had a variety of regional approaches to improving care, many of which were discussed in the State Environment section of *Section 3.1.1*. The New York SIM plan was likely to have the greatest impact on the ADK Demonstration. One state official commented that the state planned to move ahead with their statewide Advanced Primary Care initiative, whether or not New York received a SIM Model Testing award in 2014. The official explicitly stated that the new reforms built on the ADK Demonstration and its lessons. Despite competing priorities, many interviewees across stakeholder groups found the multiple initiatives to be complementary and not conflicting.

**Market factors.** Market factors affected implementation in the ADK region. The ADK Demonstration was created, in part, to address a physician workforce crisis in the region caused by provider attrition and low recruitment. Stakeholders provided mixed accounts about whether the enhanced resources provided through the ADK Demonstration had solved the region's problems. One provider group representative reported success, claiming that the region's provider base had stabilized and increased since the beginning of the ADK Demonstration—although the interviewee acknowledged that “we still need more.” A state official offered a more cautionary perspective: “The challenges facing the North Country are continuing; there are hospitals and nursing homes that are barely keeping their lights on.” A second state official and a provider association representative also were concerned about hospital solvency. The provider association representative described the market dynamics by saying, “The amazing thing is that we started this because primary care was in distress. Now because of medical homes, long-term care and hospitals are more in distress.” There was a belief among the provider community that, as primary care reached more of their populations through medical homes and other advanced care initiatives earlier in the onset of acuity or disease, hospitalizations and the demand for long-term care would be reduced.

**Uncertainty about continued Medicare participation.** Another factor affecting implementation was uncertainty about whether or not Medicare would continue participating after 2014 and the effect that losing Medicare would have on program sustainability. One payer described Medicare's entrance as a “Godsend,” claiming that Medicare's participation doubled demonstration revenue. A state official described Medicare's potential exit as “a huge loss” that would cause some practices to lose payment for a critical mass of their patients. Further, some payers did not commit to participating beyond the end of 2014. This uncertainty affected program implementation, because remaining participants would have to address sustainability with fewer payers and lower revenue. Despite the potential losses, there were stakeholders who were fully invested in the model and resolved to continue it regardless of potential payer attrition. The state official who expressed concern over losing Medicare also said, “The initiative started without Medicare, and I envision that it could continue without Medicare.”

**Health information technology (health IT) interoperability issues.** These concerns persisted in the second year of the MAPCP Demonstration. One state official noted that New York was one of 19 states participating in a workgroup charged with improving interoperability between different EHR vendors and platforms. The state official also discussed a set of regulations planned for early 2014 to establish technical and administrative requirements for the state's RHIO (Hixny) to become certified as part of a new public utility model. The RHIOs played an integral role in data sharing across practices. The outcomes of the workgroup and regulations likely affected the use of health IT and data sharing in both the ADK Demonstration and other health reforms underway in the state. We learned from the site visit that the state continued to have delays in the development of the QDC housed by MAeHC because of these interoperability problems between EHR platforms. Thus, clinical data was available to measure health care quality outcomes more rigorously.

### **3.1.4 Lessons Learned**

Several key lessons emerged during the second round of site visits.

**Payment structure needs to be modernized.** The payment structure, despite a new pay-for-performance component, lags behind new payment models. One state official expressed concerns that the program’s structure—particularly the use of care management fees—runs counter to larger delivery and payment system reforms ongoing in the state and around the country. The state official explained, “It has the danger of running counter to a lot of what we’re trying to achieve with medical homes, which is to try as hard as we can not to build upon a broken fee-for-service model.” Conversely, one payer noted that the physicians in New York are fond of the PMPM payments and “weaning them off that might be hard.” State officials and other participants are working to refine the ADK Demonstration payment methodology to develop advanced payment models that move beyond a small pay-for-performance component for the next iteration of payment reform. The interviewees’ views of the payment methodology are discussed further in *Section 3.2.3*.

**Multiple regional initiatives potentially confounds effects of demonstration.** Multiple regional initiatives in a large state offer the ability to test several models and tailor approaches to the local delivery system. However, the ADK Demonstration practices are not involved only with the MAPCP Demonstration, and there is a danger of diffusing the focus and diluting the impact with so much activity ongoing.

**Practice transformation is a long-term process and requires continual state and regional leadership support.** Multi-payer payment reform takes a great deal of work; participating parties need to be in it for the long haul. It also requires “an overarching organization with teeth,” which the ADK Demonstration did not have in early program development. As stated previously, the New York legislature formally recognized the ADK Demonstration in statute in 2009 and listed the NYS DOH as the convener of the demonstration. By using the NYS DOH as the initial convener for the multi-payer initiative, New York was able to provide guidance and antitrust protection to the participating payers. One payer praised the state for its ability to maintain relationships with the participating payers, although another payer mentioned that the state also introduced “issues of state bureaucracy.”

**Strong internal infrastructure at the payer level.** Payers agreed that this can be helpful; and most payers invested additional resources to provide the PMPM and actively participate in the implementation and ongoing monitoring of the demonstration. While none of the payers staffed a team dedicated only to the demonstration, one payer expressed the wish that, given the demands to remain an active participant, they had staffed a team to work solely on the ADK Demonstration.

## **3.2 Practice Transformation**

During the Year One site visits, practices reported that they were highly satisfied with their participation. They believed the program had met the dual goals of bringing financial stability to primary care practices, while improving both access to care and the quality of care delivered to patients through implementation of medical home initiatives. However, early medical home transformation was not without its challenges, including difficulties obtaining NCQA PPC®PCMH™ recognition, implementing and using new EHR’s, and redesigning the care process to achieve PCMH goals.

During the Year Two, practices again unanimously endorsed the value of the program, and they also consistently felt that the improvements in access, care coordination, and overall quality were perceived by their patients. Some practices, notably in Pods 1 and 3, also expressed several new and somewhat negative perceptions not evident last year. In part, these feelings seemed to have resulted from simple exhaustion after the initial years of dramatic change. Pod 2, on the other hand, still viewed the transformation activities in a more favorable light and felt their integrated network provided adequate support for enhanced care coordination and physician support. Pod 2 is organized around an integrated network of FQHCs (Hudson Headwaters Health Network), whereas Pods 1 and 3 include mostly smaller, private primary care practices.

Providers generally were concerned about whether the ADK Demonstration and provider payments from Medicare, Medicaid, and commercial payers would continue after 2014. Some practices also were concerned about the potential negative impact of new accountable care organizations (ACOs) that were being established in the area. Others had taken steps to collaborate with area providers to submit a Medicare ACO application to CMS, in an effort to sustain medical home transformation after 2014 with additional financial resources. These feelings seemed to translate, at least for some practices, into a lack of enthusiasm for further change, compounded by continuing frustration with some of the inherent problems of providing primary care in a rural region in small practices: insufficient staff to divide up the work and inadequate access to care coordination services.

### **3.2.1 Changes Practices Made During Year Two**

**PCMH recognition and practice transformation.** Practices continue to make changes to their primary care delivery system related to NCQA PPC® PCMH™ recognition, care management processes, staffing, and health IT in order to maintain PCMH standards.

The ADK Demonstration required that participating practices obtain NCQA PPC® PCMH™ recognition in the early phases of the demonstration. In this section, we review the types of changes ADK Demonstration practices made in the past year to maintain PCMH standards and new projects underway. We also note areas that seemed to have stagnated, or remained problematic. Most practices in Pods 1 and 3 did not have a patient portal through which patients could access their health data and communicate with their providers, although some were contemplating implementing a portal. Pod 2 implemented the patient portal in the past year across all their associated FQHCs, and they were beginning to promote its use. According to one provider, “You don’t have to call [the patient]. The time it saves and the increase in communication to the patient is phenomenal. So that’s another benefit.”

Most practices implemented at least some processes for medication reconciliation early in the ADK Demonstration, and these activities continued. Most practices used the functionality that accompanied their EHRs for this purpose. One practice offered patients the opportunity to do medication reconciliation online through their portal. Another worked with their local hospital to improve the process of medication reconciliation at the time of discharge, which was associated with a large decrease in the number of medication discrepancies discovered when the patient returned to the medical home practice. One Pod employed a full-time pharmacist who assisted with reconciliation for some patients, although the pharmacist was based at the Pod headquarters, not in a practice site.

One practice in Pod 2 had implemented automated reminder calls for colorectal, breast, and cervical cancer screenings in the past year. A pediatrician noted particular success using the calls to remind patients about immunizations, and Pod 2 was planning to roll out more automated calls across more of their FQHC sites. In addition, several practices reported that they provided patient group visits—most frequently focused on health awareness, diabetes, hypertension, and weight management.

In the past year, participating practices in all three Pods collaborated with their local and regional hospitals to apply for ACO status beginning in 2014. According to a Pod 3 representative, “2014 is the year of the ACO for us up here. We’re going to try to figure out how to do this.” The ACO was sponsored jointly by the two local hospitals, and it included several practices besides those participating in the ADK Demonstration. Although most practices endorsed the effort and joined in the application, others were either wary of or opposed to the concept. Concerns centered on the notion that the ACO would be hospital-directed, a model that disempowered local practices. On the basis of substantially higher charges for the same services if provided by the hospital, practices also were concerned that the arrangement would lead to higher costs for patients and payers.

In the past year, practices adjusted their care coordination processes. Many practices implemented routine revisit planning and provided patients with postvisit summaries. Practices were still experimenting with how to optimize care processes among their staff and establish the most effective teams. Practices from Pod 2 spoke at length of the changes made in past year to integrate care managers more effectively into their associated practices and to ensure that care managers were reaching out to and engaging with the patients most in need of their services. Notably, they transitioned from targeting patients with specific health needs (e.g., diabetes, congestive heart failure [CHF]) to any patient identified as needing care management, regardless of their particular health needs.

Several problem areas were identified in the past year across all Pods and practices interviewed.

**Access to data and using it to improve performance.** The smaller ADK Demonstration practices generally struggled both to acquire patient-level and practice-level utilization and quality data and to use it as a performance improvement tool. Similar to the first year, practices in Pods 1 and 3 relied heavily on whatever information could be extracted from their own EHR. Because the Pods 1 and 3 administrator and care management staff accessed the MAPCP Demonstration Web portal and distributed RTI-generated Medicare utilization data to practices within their Pods, providers typically did not access the Medicare beneficiary utilization files directly and generally were unaware of the source of the data. Similarly, Pod 2 care managers routinely accessed the RTI Web portal to pull Medicare beneficiary utilization files to assist in identifying high-risk patients in need of extensive care management, even if providers in the practices were unaware of these data.

Several state-level initiatives aimed to collect and aggregate data, including the Hixny repository, the utilization and cost reports generated by Treo, and the QDC being developed by MAeHC. Some providers, however, never reviewed any of these data or recognized their value for the clinical care of patients. With the exception of the RTI Medicare beneficiary utilization files in some cases, the timeliness and accuracy of the data generated from Treo, RTI, and

MAeHC were serious concerns echoed across most practices and Pods. One provider commented, “The data is very old. It’s last year’s news. It’s not actionable, and it’s not useful. Those are the findings from a year ago. It’s useless because you can’t figure out where the trending is.” Several practices also described the challenges of aggregating data across the different data reports and data portals. According to one practice, “The idea of checking three or four portals makes my head spin.” Another provider commented, “I think the lack of ability to pull data together is really the Achilles heel of the PCMH pilot.”

With the exception of practices in Pod 2, the majority of practices in the ADK Demonstration had few or no resources to help provide care for patients with behavioral health problems. Most providers were doing their best to manage simple depression; more complicated problems and most of the behavioral issues were not addressed. Providers noted that many behavioral problems (e.g., alcoholism, tobacco use, drug abuse) were prevalent in their patient population. Even Pod 2, which hired a social worker to help with these and other high-needs patients, reported that the resources available to help these patients were inadequate and that patients with severe behavioral health issues had significant unmet needs.

**Practice staffing changes.** Most practices were using a mix of staff to provide team-based care, typically relying heavily on medical assistants to support previsit planning and assume some of the duties otherwise given to physicians. Physician extenders (nurse practitioners and physician assistants) were used in some practices, particularly in Pod 2 and its network of FQHCs. Where available, they were highly valued. In the words of one physician, “I think the role of the mid-level provider really shines in the medical home model. And I think it helps get doctors off the treadmill.” Several practices, however, complained of relatively high turnover rate among their staff and the difficulty of having to train new hires to replace them.

Most staffing changes in the past year occurred at the Pod level and were related to care coordination. As an example, in one Pod, the care coordination nurses handled patients transitioning from an inpatient hospitalization, but over the past year these responsibilities were reassigned to a dedicated transition coordinator. Some practices looked at whether the care coordination staff could handle other assignments, for example, acting as advanced practice nurses and providing direct care for patients with certain problems. In another Pod, social workers were hired to take on social and community support needs from the registered nurse (RN) care coordinators. In the past year, a pharmacist hired at one Pod was extremely popular and in demand, as was a nutritionist. By being Pod-based, however, these staff typically were only available for a morning or two at any one practice.

**Health information technology.** In the early years of the ADK Demonstration, all participating practices implemented EHRs. Because practices have different EHR vendors, they are unable to exchange information with each other. One practice noted, “If you were going to design this pilot over again, since most didn’t have fully functioning EHRs or ones with interoperability functions before this, we would have said, ‘Here is the pilot-approved EHR. If you have one that meets the standards, we may grandfather you in.’”

All EHRs allowed e-prescribing, and most EHRs interfaced successfully with the local hospital to exchange progress notes, discharge summaries, and lab data. According to one provider, only two systems had incorporated significant decision support functionality. One practice was able to transfer patient data to consulting specialists through their EHR, but

generally this type of data transfer was handled by fax, and appointments were arranged over the phone.

Practices' views of their EHRs were mixed. Some practices in Pods 1 and 3 had significant difficulties receiving technical support and assistance from their vendors and thus did not regard its functionality favorably as a viable care management or medical home tool. Pod 2 implemented its EHR—Athena—in the past couple years, and they spent considerable time learning how to make optimal use of its visit summary and report writing capabilities. Pod 2 interviewees talked at length of the utilization and quality of the care metric tracking they began in the past year through Athena. Most Pod 2 interviewees were pleased with the roll-out of Athena and with their ability to act upon the utilization data generated from the EHR.

### **3.2.2 Technical Assistance**

Physicians viewed the Medicare beneficiary utilization files and quarterly practice feedback reports received from RTI favorably and saw them as a supplement to their overall portfolio of both patient-level and practice-level data used for monitoring quality performance. One Pod interviewee explained how IT staff compared and used the RTI utilization reports to see changes in risk levels. If a patient became high risk, they were flagged, and staff at all levels of the care team were made aware of the status change and could make needed adjustments.

Problems continued in the state with the development of the QDC. While some practices began to view or receive quality of care data feedback from MAeHC, the majority of practices across the Pods still encountered problems with these data. They cited the Hixny interface issue with their EHR as the source of the problem. Those practices were somewhat skeptical that the QDC would be fully functioning before the end of the ADK Demonstration.

Most technical assistance was provided to practices through their Pod or local hospitals. In some cases, care managers were offered training opportunities hosted by their Pod, their employer organization, or a local hospital, but in Pod 2, many care managers sought out training opportunities themselves, rather than wait for their employer organization to offer it. Both the quality and the extent of this assistance varied substantially across Pods. Pod 2 offered a wide range of training programs, but the offerings were slim in Pods 1 and 3. Quarterly reports to CMS in 2013 listed more than a dozen separate programs, retreats, and webinars in Pod 2, but only two or three training events were listed for Pods 1 and 3. Other than the ADK Demonstration annual Medical Home Summit hosted by AHI, there was no state-supported or AHI-supported technical assistance offered in the past year. Dr. Dennis Weaver, a medical home consultant for the ADK Demonstration, continued to support the practice transformation efforts, and his support to practices was funded through a variety of resources. This was a marked change from the early years of the ADK Demonstration, when the state provided support in the form of a consultant who helped practices through the NCQA PPC<sup>®</sup> PCMH<sup>™</sup> recognition process.

Practices also leveraged training outside of the ADK Demonstration. For example, some practices participated in the CMS care transitions program and received training through that. Practices in Pod 3 were disappointed that the local hospital had lost its continuing medical education accreditation program and, thus, its standing programs like Medical Grand Rounds. Many practices in all three Pods expressed a need for additional training, particularly as new

staff were hired. There was a perception that few resources were available in the past year to train staff sufficiently in key areas, such as patient-level behavior change, motivational interviewing, and finding and using community resources.

### **3.2.3 Payment Support**

Perceptions about the payment support available through the ADK Demonstration had not changed appreciably from last year. The practices were all aware that a study had estimated the cost of operating a medical home in New York at \$13 PMPM, but the ADK Demonstration was only providing \$7. Similar to last year, practices and Pod managers reported that the monthly medical home payments were insufficient to meet all the needs of patients and sustain practice transformation. Despite the absence of data on costs and savings, several practices expressed the view that the ADK Demonstration had to be saving more than \$7 PMPM.

The ADK Demonstration adopted a \$0.50 PMPM pay-for-performance component this past year, an amount perceived as important in raising awareness of the need for constant improvement in the quality of care delivered. Practices uniformly complained, however, that the data needed to decide whether the performance criteria had been met generally were not available because of the problems Treo had in aggregating and analyzing the all-payer data and the problems with MAeHC's QDC and the interface with Hixny, as previously discussed in *Section 3.1.3*.

Similar to last year, practices reported that, by and large, funds provided through the ADK Demonstration were used to hire new staff, or just keep smaller practices afloat by supporting the bottom line. There were no significant changes in how practices used the medical home payments. A Pod 3 practice commented, "The main strength for our practice is that it [medical home payments] provides funding that we absolutely have to have. We would not have employed our other Med-Peds doctor if we didn't have the extra money for the medical home; I'm not sure we'd be a solvent practice without that money." Another Pod 3 practice echoed the same sentiment: "Without the medical home funding, I think we would be out of business." In some practices, the funds were used to maintain and upgrade their EHRs. Some practices that were members of practice groups did not see the funds directly; they went instead to the parent organization.

Almost all practices and Pods were worried about continued funding for their efforts. One provider noted, "From the provider side, there's a huge amount of anxiety because we're depending on the money, it's helping us to stay afloat and if it disappears, we're in a world of hurt."

### **3.2.4 Discussion of Practice Transformation**

Our review of the ADK Demonstration in the past year found that it was popular with providers, and it was perceived as meeting the program objectives of improving the quality of and access to medical care, despite some of the frustrations and short-comings described by practices. No significant changes were reported this past year with regard to practice transformation, staffing, technical assistance, and payment support. In general, practices continued initiatives implemented in earlier years and spent time modifying those initiatives as needed. The provision of technical assistance was viewed as a short-coming this year, and

practices voiced concerns about sustainability of their efforts after the end of the ADK Demonstration.

A unique feature of the ADK Demonstration was the Pod structure. The Pods served remarkably well as a vehicle for providing care coordination services to a group of small practices that would have struggled to establish and maintain coordination programs on their own. The Pods also served many other functions, particularly in providing advice and support on a wide range of issues and standardizing care across the practices. The Year Two site visit interviews, however, uncovered a notable and perhaps growing disparity between Pod 2 (a network of FQHCs under the same ownership) and Pods 1 and 3 (unaffiliated, small practices linked together primarily by geography). This was reflected in almost every dimension of practice transformation that we examined, with Pod 2 having more and better resources, more training, and seemingly higher levels of provider satisfaction and engagement. In contrast, the smaller and more isolated practices that made up Pods 1 and 3 were challenged by their limited capacity in expanding access, especially for those with just one or two providers in a practice. In particular, for Pods 1 and 3:

- The reach of care coordination services was more restricted and tended to focus almost exclusively on recently discharged patients and the most medically complex patients. This somewhat improved in Pod 3 because care coordinators took any referral from a provider regardless of the need. There was also a robust transitional care program made up of six full-time RNs and one part-time RN, across three hospitals.
- Small practices claimed that they did not see meaningful aggregated data or patient-specific data regularly and in a timely fashion. As a result, their use of data to drive improvement was minimal. None of the interviewed practices identified specific areas for performance improvement.
- Compared to last year, there seemed to be a paucity of new programs or services being considered. The small practices seemed to be hunkered down and just struggling to sustain the status quo.
- There typically was no one person or group of care managers in the practice dedicated to this important aspect of practice transformation. The small practices generally were too small to have a dedicated care manager, in contrast to larger practices or ones belonging to an integrated network of multiple clinic/practice sites.

### **3.3 Quality of Care, Patient Safety, and Health Outcomes**

#### **3.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

During Year Two, there was a shift in the care management process, particularly in Pod 2, from targeting patients with specific diseases (diabetes, heart disease, etc.) to a broader focus on the whole patient. While care managers continued to target patients with specific conditions, their approach was no longer disease-specific; they created care managements plan that addresses all issues facing the patient, ranging from care coordination to education and

social support. A physician from Pod 2 described this change as the most significant change in the role of care managers over the past year. Pod 3 staff mentioned similar changes and began discussions to provide more nurse educators and social support services across the Pod.

Care management teams, staffed by advanced care nurses who were usually RNs or, occasionally, nurse practitioners, were a critical component of efforts to improve the quality of care among participating practices in New York. As we learned in the first year, care managers provided intense care support and education to patients and helped coordinate care across multiple providers and settings. Care managers across all three Pods typically covered several practice locations and worked as a team with a practice's nurses, mid-level providers (nurse practitioners and physician assistants), and physicians to meet patients' needs. Some practices, particularly in Pod 2, focused on making sure practices met targets for key quality of care metrics. To do so, practice staff made concerted efforts to reach out to patients and coordinate provision of any needed tests or treatments. Practices often implemented condition-specific projects to improve metrics (e.g., focusing on services for patients who were obese or had CHF).

Adoption of health IT infrastructure catalyzed many care managers' efforts to improve the quality of care. As part of the ADK Demonstration, all providers agreed to participate in an organized disease registry and develop data reporting capabilities to report on access to care, clinical processes, clinical outcomes, and patient experience with care. Experience with all these data initiatives in the past year was positive across the Pod regions. One care manager from Pod 2 suggested that the availability of these data to all levels of health center staff engaged the whole team in patient care and was a critical component of effective care management. A practice in Pod 3 felt that the enhanced functionality of their EHR system improved quality of care for the patient. In this provider's words, "Our care is more systematized and I miss less things with patients. Because of these medical home enhancements, they are getting better resources."

The availability of data also facilitated greater use and more efficient delivery of preventive care, particularly in Pod 2. A provider from Pod 2 discussed how a significant part of the focus on preventive health was now the responsibility of other practice staff, before patient appointments. This provider explained that patients were being reminded to get certain tests, schedule periodic office visits for prevention or maintenance of their conditions, or receive educational resources before their office visit. These additional steps aimed at improving patient self-management helped providers to be better prepared to care for the patient during the visit.

In Pod 2, a practice described renewed efforts to integrate EHR data and office data to build a better workflow for asthma care. The practice improved its ability to identify asthma patients who were likely to become "frequent flyers" to the ER by monitoring patients' rescue-inhalers. Patients should only use one or two per year, and if they needed more than that, then a discussion was needed to consider the patient for preventive medicine. High use of short-acting beta agonists posed a safety risk for patients, particularly given the known risk of cardiovascular side effects from its prolonged use.

Pod 2 tracked quality of care metrics through the EHR, and care managers and practices consistently reported improvements in the use of evidence-based practices for treating chronic conditions and preventive care. They attributed these changes to their increased tracking of the metrics and the use of clinic staff to follow up with patients who needed services. Pod 2 also met

with local payers to discuss receiving cost data, intending to make referrals to lower-cost, high-quality ancillary services. Before the ADK Demonstration, a lack of transparency in cost data was seen as a barrier to taking meaningful next steps to create an efficient health system. Two providers from Pod 1 expressed frustration that automated reports on services such as vaccinations and screening could not be produced through the user interface with their EHR, although this information was available in the EHR. As a result, the physician, or other practice staff, had to monitor this manually.

Another concern was that quality measures had the potential to provide a misleading picture of performance. A physician from Pod 1 cited the example of a measure related to asthma care, which assumed that no more than two albuterol inhalers should be prescribed each year. A patient living with separated parents, however, might require three—one inhaler with each parent and one at school. Rather than indicating poor clinical practice, the additional prescription represented a physician working to solve a practical problem and taking the whole patient into consideration.

Improving medication safety was one of the central approaches to improving overall patient safety in the ADK Demonstration. With the adoption of EHR systems, providers easily found medication and formulary information, as well as alerts of potential drug interactions and medication adherence details. One change occurring in the past year was that practices in all three Pods had a clinical pharmacist embedded within their practice teams to provide services such as reviewing patients' charts for potential conflicts in medications and consulting patients on medication use and adherence.

### **3.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes**

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization measures. The results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in *Section 3.3.3*.

**Process of care measures.** *Table 3-4* reports covariate-adjusted differences in several process measures that indicate quality of care across the MAPCP Demonstration and two comparison groups: PCMHs and non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures that address whether beneficiaries received all four of the recommended actions in diabetes care or none of the quality actions, respectively. The last indicator, on whether a beneficiary received a total lipid panel follows the care guidance for patients with ischemic vascular disease (IVD).

We examine the probability of receiving the recommended services. These dichotomous (i.e., yes/no) indicators are modeled using logistic regression models. Estimates in *Table 3-4* are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care while a *positive* value corresponds to an *increase* in the likelihood. MAPCP Demonstration beneficiaries are expected to have more positive values in all of the indicators, except the 'none' indicator in diabetes care.

**Table 3-4**  
**New York: Comparison of average change estimates for**  
**process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 4,112)	1.24	[-1.30, 3.78]	1.52	[-0.36, 3.40]
Year Two (N = 3,087)	2.97	[-0.42, 6.37]	1.16	[-0.98, 3.29]
Overall (N = 4,396)	1.97	[-0.48, 4.43]	1.37	[-0.32, 3.06]
Retinal eye examination				
Year One (N = 4,112)	2.44*	[0.49, 4.40]	1.10	[-1.28, 3.49]
Year Two (N = 3,087)	1.44	[-0.99, 3.86]	5.59*	[2.83, 8.34]
Overall (N = 4,396)	2.02*	[0.35, 3.68]	3.00*	[0.91, 5.10]
LDL-C screening				
Year One (N = 4,112)	0.77	[-2.55, 4.10]	2.82	[-1.17, 6.82]
Year Two (N = 3,087)	1.65	[-0.73, 4.03]	3.70	[-0.36, 7.75]
Overall (N = 4,396)	1.14	[-1.39, 3.68]	3.19	[-0.43, 6.82]
Medical attention for nephropathy				
Year One (N = 4,112)	-1.03	[-6.63, 4.56]	4.89*	[0.14, 9.63]
Year Two (N = 3,087)	-5.56	[-11.53, 0.40]	3.21	[-2.69, 9.10]
Overall (N = 4,396)	-2.95	[-8.40, 2.49]	4.18	[-0.40, 8.75]
Received all 4 diabetes tests				
Year One (N = 4,112)	1.71	[-2.07, 5.49]	1.88	[-1.91, 5.68]
Year Two (N = 3,087)	-0.81	[-5.43, 3.81]	4.43	[-1.13, 9.99]
Overall (N = 4,396)	0.64	[-3.19, 4.48]	2.96	[-1.03, 6.95]
Received none of the 4 diabetes tests				
Year One (N = 4,112)	-1.02	[-2.52, 0.48]	-0.65	[-1.57, 0.27]
Year Two (N = 3,087)	0.04	[-1.69, 1.78]	0.08	[-0.96, 1.12]
Overall (N = 4,396)	-0.57	[-2.08, 0.94]	-0.34	[-1.10, 0.42]
Total lipid panel				
Year One (N = 6,603)	1.14	[-1.29, 3.58]	2.36	[-0.43, 5.15]
Year Two (N = 5,096)	3.12*	[0.30, 5.93]	1.32	[-1.77, 4.41]
Overall (N = 7,384)	1.99	[-0.39, 4.36]	1.92	[-0.70, 4.54]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

ADK = Adirondack Medical Home Demonstration; CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with an increase in the likelihood that demonstration beneficiaries received a **retinal eye examination** by 2.02 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with an increase in the likelihood that demonstration beneficiaries received a **retinal eye examination** by 3.00 percentage points.
- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimate suggests a positive trend towards receiving a **total lipid panel test** among ADK Demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.

**Preventable hospitalization measures.** Aside from studying processes of care, largely based on evidence-based guidelines, we also evaluated patient outcomes among beneficiaries in MAPCP Demonstration and comparison practices. Some patient medical events, such as those measured with Prevention Quality Indicators (PQIs), may be preventable with adequate access to high quality primary care services. We defined avoidable catastrophic events as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, chronic obstructive pulmonary disease (COPD) or asthma in older adults, asthma in younger adults, hypertension, and CHF. The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 3-5** reports covariate-adjusted differences in these patient outcome measures.

**Table 3-5** shows differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improvements in the quality and access to ambulatory care, we expect MAPCP Demonstration beneficiaries to have reduced rates (i.e., a significant negative value) of these avoidable hospitalizations.

**Table 3-5**  
**New York: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 21,481)	0.12	[-0.62, 0.87]	0.48	[-0.28, 1.24]
Year Two (N = 22,767)	-0.92	[-2.09, 0.25]	-0.31	[-1.74, 1.11]
Overall (N = 24,755)	-0.41	[-1.21, 0.39]	0.07	[-0.78, 0.93]
PQI admissions—overall <sup>2</sup>				
Year One (N = 21,481)	-2.02*	[-3.86, -0.17]	-1.86	[-4.10, 0.38]
Year Two (N = 22,767)	-1.43	[-3.91, 1.06]	-1.64	[-4.14, 0.87]
Overall (N = 24,755)	-1.72	[-3.70, 0.27]	-1.74	[-3.96, 0.47]
PQI admissions—acute <sup>3</sup>				
Year One (N = 21,481)	-1.09	[-2.36, 0.18]	-0.88	[-2.03, 0.27]
Year Two (N = 22,767)	-0.18	[-1.14, 0.78]	-1.68	[-3.71, 0.35]
Overall (N = 24,755)	-0.63	[-1.55, 0.30]	-1.29	[-2.79, 0.21]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 21,481)	-1.01	[-2.21, 0.20]	-0.87	[-2.26, 0.52]
Year Two (N = 22,767)	-1.43	[-3.70, 0.85]	0.05	[-1.10, 1.19]
Overall (N = 24,755)	-1.22	[-2.89, 0.45]	-0.40	[-1.47, 0.67]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

ADK = Adirondack Medical Home Demonstration; CG = comparison group; COPD = chronic obstructive pulmonary disease; PCMH = patient-centered medical home; MAPCP = Multi-Payer Advanced Primary Care Practice; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, there were no statistically significant overall estimates indicating that the ADK

Demonstration is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among MAPCP Demonstration beneficiaries.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, there were no statistically significant overall estimates indicating that the ADK Demonstration is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among MAPCP Demonstration beneficiaries.

### **3.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes**

The metrics for the quantitative analyses discussed above relied on Medicare administrative claims data. For most of the quality indicators, there were no statistically significant findings when comparing ADK Demonstration practices to the comparison group. Nonetheless, positive coefficients across many of the process of care measures for at least 1 of the 2 years suggested that ADK Demonstration practices showed potential progress towards an increase in the probability of receiving the recommended care relative to the comparison group. We observed a statistically significant increase in the likelihood of ADK Demonstration beneficiaries with diabetes receiving a retinal eye examination relative to beneficiaries at both PCMH and non-PCMHs in the comparison group. This positive outcome was consistent with findings from our interviews with providers and other stakeholders that there was greater emphasis on preventive care, particularly among beneficiaries with chronic conditions like diabetes, who received annual eye and foot exams as part of efforts to improve quality of care.

For the overall estimates, we observed no evidence indicating that the ADK Demonstration was associated with changes in the rates of preventable hospitalizations relative to the PCMH or non-PCMH comparison group. During our Year Two site visit, providers and other stakeholders cautioned that it could take more than 2 years to see improvement in quality of care outcomes, such as preventable hospitalizations, that could be associated with ADK Demonstration activities.

## **3.4 Access to Care and Coordination of Care**

### **3.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two**

Nearly all practices made changes to expand access in the early years of the ADK Demonstration. For example, many of the smaller practices accommodated walk-in patients, and the larger practices expanded hours and used open visit slots to improve same-day access. These improvements in patient access to care evolved over the course of the ADK Demonstration. One provider in Pod 3 noted that both the pediatricians and adult medicine physicians offered 24 hour access to a provider for all their populations. Urgent care facilities are scarce in the region, so most after-hours care was handled by rotating call schedules via answering services. In emergency situations, providers would advise the patient to visit the local hospital ER, and that physician on call from the practice would visit with the patient in the ER. One practice in Pod 3 noted that the local hospital declined to provide space near the ER for primary care providers to see their patients after hours.

In the past year, two limiting factors were identified in regard to improving access. First, most practices have space-constraints, and there was no room to add providers. Pod 2, in particular, noted the lack of available space at their practices to embed care managers. Second, many practices mentioned the difficulty of recruiting new practitioners to the area. This issue was at crisis levels before the ADK Demonstration and had improved noticeably by the time of our second site visit, but attracting new physicians remained challenging for this very rural area. One provider described intense, yet failed, efforts at recruitment: “We’ve done everything except carry their luggage to the Adirondacks.”

According to the practices, improved coordination of care resulting from the deployment of Pod-based care coordinators was the major accomplishment of the ADK Demonstration. By the end of 2013, all practices had access to care coordination services, at least part time. A major change since the 2012 site visit was the assignment of specialized RN coordinators to patients discharged to home after a hospital admission. These nurses, separate from care managers employed by the Pods, are embedded in participating practices and are employed by the hospitals with the goal of preventing readmissions by improving care coordination. Transition coordinators help arrange home services, ensure patients have a follow-up appointment at their practice, serve as liaisons to the other RN care coordinators in the practice, assist with medication reconciliation, and follow up with patients by phone (or, in some cases, with home visits) after discharge.

In some practices, the care team was expanded to include a pharmacist, nutritionist, and social workers. In addition, the care management evolved, away from telephone contact and towards more face-to-face interactions. Coordination with community-based services was also sometimes a focus; Pod 3 was experimenting with care navigators to help patients needing access to community resources.

Although coordination of care was viewed as a cornerstone for care improvement in the ADK Demonstration, practices identified several challenges to improvement. First, practices feel there are large disparities in resources amongst the Pods, particularly in the number of staff available for care management. A challenge noted by one practice was that not all patients had equal access to the full breadth of care coordination services offered. For example, in the local hospital the care transition nurse (a hospital employee) focused primarily on Medicare patients, reportedly because of higher reimbursement rates compared to Medicaid and in some cases private payers. According to this practice, the Pod pharmacist also appeared to give preferential attention to Medicare patients.

Capacity to track care manager activity was also an issue. Hudson Headwaters Health Network, a consortium of health centers that make up Pod 2, designed a Microsoft Access database to document care coordination services when it involved both hospital transitions and practice or Pod-based care manager. Generally, however, the care managers from both settings had no standardized way of documenting care or tracking their patients. One hospital in Pod 3 was assessing the use of this database in their care setting. Practices and Pods also reported the need for better data to prioritize patients for care coordination services. Although many practices received notices of admissions, there did not appear to be any consistent way for practices or care managers to identify their highest utilizers, or patients who would benefit most from care coordination. One care manager mentioned: “That capacity [to use data to identify the patients most in need of care coordination] is beginning to come online. I haven’t used it yet, but I once

pulled a list of patients with HgA1c's greater than 9. We were surprised [that so many patients had high HgA1c's]." Some practices and Pod-based care managers did note that they were using various utilization reports, either from their EHR or from other sources such as the Medicare beneficiary utilization files, to improve their ability to target coordination efforts to the highest users of acute and emergency care.

Practices universally felt they would benefit from additional resources for care coordination. Direct access to a care coordinator was limited to one or two days per week for most practices in Pods 1 and 3, necessitating a focus on only the most complex patients. In contrast, a care coordinator was onsite every day at some practices in Pod 2. Additional care coordination staff was perceived as the key to keeping moderately complex patients from becoming the next crisis. One care manager noted, "I need more staff and hands. There are too many patients who need an intense level of help. We have to be able to work with them as long as we need them and that is resource intensive—especially if we can show we are making a difference, which we do show."

Similar to findings from the 2012 site visit, there did not appear to be a coordinated approach demonstration-wide in the past year to measure access in the ADK Demonstration practices, or any expectation that the practices measure access themselves. Similarly, there was no process in place to assess care coordination, although the impact may be indirectly inferred from the available data on adherence to quality and utilization measures. While interviewees could not say whether there were demonstrated improvements in access or coordination of care, practices generally believed that there had been a major reduction in ER utilization as a result of the ADK Demonstration and this outcome indirectly demonstrated improved access to primary care in the region. One practice commented, "We have cut our ER rate more than in half. And all the trends show that." Another practice commented, "Access to care has definitely improved, and I think I can definitely say that there has been a marked decrease in ER utilization, which was a major issue in the ADK region." One practice identified a marked decrease over time in potentially avoidable ER visits. Providers pointed to other factors, however, that probably also contribute to decreased ER utilization, among them the economic downturn of the past several years, which had a dramatic effect on this region of the country. In addition, several major employers in the area (including the local hospital) had transitioned their employees to high-deductible insurance plans that may have discouraged ER use because of higher copayment requirements.

### **3.4.2 Changes in Access to Care and Coordination of Care**

Our evaluation of the MAPCP Demonstration and access to and coordination of care addresses whether the ADK Demonstration was associated with changes in the utilization of primary care services and specialist services, and with enhanced coordination of care for Medicare beneficiaries. **Table 3-6** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across ADK Demonstration practices and two comparison groups: PCMHs and non-PCMHs. The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 3.4.3**.

The first four measures address utilization of primary care and specialist services. MAPCP Demonstration beneficiaries are expected to have an increase in utilization of primary care services and a decrease in utilization of specialist services relative to comparison group

beneficiaries after the start of the MAPCP Demonstration. We look at the quarterly rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall visit rate, for example if MAPCP Demonstration is associated with reductions in both primary care and specialist visit rates, we also analyzed the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. Having a higher percentage indicates greater use of primary care services relative to specialist services. MAPCP Demonstration beneficiaries are expected to have higher primary care visit percentages.

We analyzed two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. The ADK Demonstration is expected to increase the follow-up visit rate and reduce the unplanned readmission rate.

Finally, we assessed continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plans. The value of the continuity of care index, which is measured annually, ranges from 0 to 1. MAPCP Demonstration beneficiaries are expected to have higher values of the continuity of care index.

With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile.

**Table 3-6**  
**New York: Comparison of average change estimates for access to care**  
**and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 21,481)	12.45	[-45.84, 70.74]	12.00	[-54.30, 78.30]
Year Two (N = 22,767)	-43.81	[-108.34, 20.71]	26.19	[-63.71, 116.09]
Overall (N = 24,755)	-16.33	[-74.15, 41.50]	19.26	[-56.95, 95.47]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 21,481)	-15.67	[-50.85, 19.51]	-14.10	[-50.64, 22.44]
Year Two (N = 22,767)	-4.49	[-53.95, 44.96]	0.17	[-51.24, 51.58]
Overall (N = 24,755)	-9.96	[-49.75, 29.84]	-6.80	[-47.82, 34.22]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 21,481)	17.90*	[6.77, 29.03]	21.37*	[2.08, 40.66]
Year Two (N = 22,767)	11.36	[-1.42, 24.15]	13.37	[-0.91, 27.64]
Overall (N = 24,755)	14.56*	[3.22, 25.90]	17.28*	[1.12, 33.43]
Primary care visits as percent of total visits (higher quintile = larger percentage)				
Year One (N = 16,372)				
1st quintile	0.70	[-2.49, 3.89]	-1.03	[-5.16, 3.10]
5th quintile	-0.38	[-2.04, 1.27]	0.55	[-1.69, 2.78]
Year Two (N = 13,542)				
1st quintile	5.31*	[2.26, 8.35]	2.00	[-1.99, 5.99]
5th quintile	-3.00*	[-4.66, -1.34]	-1.03	[-3.08, 1.01]
Overall (N= 18,152)				
1st quintile	2.74	[-0.24, 5.72]	0.31	[-3.66, 4.29]
5th quintile	-1.54*	[-2.89, -0.20]	-0.16	[-2.22, 1.91]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N=3,096)	-5.72	[-49.10, 37.65]	10.14	[-44.73, 65.01]
Year Two (N=3,114)	5.68	[-41.31, 52.66]	28.23	[-41.43, 97.90]
Overall (N=5,335)	-0.10	[-41.13, 40.93]	19.06	[-40.40, 78.52]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N=3,733)	-15.45	[-38.20, 7.30]	-1.83	[-23.26, 19.60]
Year Two (N=3,748)	-15.66	[-41.81, 10.50]	4.58	[-23.28, 32.44]
Overall (N=6,320)	-15.55	[-36.40, 5.29]	1.33	[-16.77, 19.43]

(continued)

**Table 3-6 (continued)**  
**New York: Comparison of average change estimates for access to care**  
**and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care index (higher quintile = better continuity of care)				
Year One (N = 21,461)				
1st quintile	3.67*	[1.94, 5.41]	1.98	[-0.20, 4.16]
5th quintile	-2.53*	[-3.69, -1.37]	-1.35	[-2.85, 0.15]
Year Two (N = 18,028)				
1st quintile	5.89*	[3.78, 8.00]	4.50*	[1.43, 7.57]
5th quintile	-3.67*	[-5.07, -2.28]	-2.82*	[-4.89, -0.75]
Overall (N = 22,686)				
1st quintile	4.66*	[2.98, 6.34]	3.10*	[0.74, 5.47]
5th quintile	-3.04*	[-4.17, -1.90]	-2.00*	[-3.62, -0.39]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among MAPCP Demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

ADK = Adirondack Medical Home Demonstration; CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with an increase in the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries by 14.56 per 1,000 beneficiary quarters. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with an increase in the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries by 17.28 per 1,000 beneficiary quarters. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in primary care visits as a share of total visits. Specifically, the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's primary care visits as percent of total visits was in the upper quintile. The upper quintile represents beneficiaries with multiple chronic conditions who had the highest percentage of visits in the primary care setting.
- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in continuity of care, as measured by concentration of visits. Specifically, the demonstration is associated with an increase in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and a decrease in the likelihood that the continuity of care index was in the highest quintile. The lowest quintile represents beneficiaries whose ambulatory visits were least concentrated with their PCMH providers or providers referred by their PCMH providers, while the higher quintile represents beneficiaries whose visits were most concentrated with their PCMH providers and referred providers.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in continuity of care, as measured by concentration of visits. Specifically, the demonstration is associated with an increase in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and a decrease in the likelihood that the continuity of care index was in the highest quintile. The lowest quintile represents beneficiaries whose ambulatory visits were least concentrated with their PCMH providers or providers referred by their PCMH providers, while the higher quintile represents beneficiaries whose visits were most concentrated with their PCMH providers and referred providers.

### 3.4.3 Discussion of Access to Care and Coordination of Care

Overall, there was no evidence that ADK Demonstration practices were associated with a decrease in the rate of medical specialist or surgical specialist visits per 1,000 beneficiary quarters. Rather, there were increases in the rates of medical specialist visits relative to both comparison groups. Providers and stakeholders acknowledged during Year Two that their ability to expand access to care was somewhat constrained by the lack of providers in the underserved area and space constraints at their practice locations. On the other hand, ADK Demonstration practices focused many resources and efforts on care coordination, particularly among patients with chronic conditions, which is disproportionately represented by Medicare beneficiaries

within their patient panels. As beneficiaries with chronic conditions receive more intense care management and techniques to improve self-management of their conditions, one possible outcome is reducing the number of visits to their primary care provider for the condition(s).

There was no evidence that the ADK Demonstration was associated with improving continuity of care relative to PCMHs and non-PCMHs in the comparison group. The finding that ADK Demonstration practices experienced significantly lower continuity of care index values than the comparison groups for Medicare beneficiaries warrants further exploration into possible factors that may be contributing to this outcome. Site visit findings do not provide any explanations for why this trend of reduced continuity of care among ADK Demonstration practices may be occurring.

### **3.5 Beneficiary Experience with Care**

#### **3.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

In New York's application to the MAPCP Demonstration, several features of their initiative were specified to improve patient experience with care. These features, initiated over the course of practice transformation and improved during the second year of the MAPCP Demonstration, include

- Better access to and coordination of care,
- Adequate time and guidance from providers,
- Assistance with self-management to empower patients to manage their health,
- Support for prevention and wellness activities, and
- Help with transitions of care between care settings and multiple providers.

Care managers continue to play a major role in patient engagement and self-management during Year Two. Care managers from all Pods received ongoing training in effective patient engagement methods, such as motivational interviewing. Providers also noted that care managers were identifying additional contacts for patients and involving caregivers in decision-making when appropriate.

Pods organized several events covering self-management topics for their local communities. The prevention coordinator in Pod 2 held a community event with Cornell Cooperative Extension on the topic of grocery shopping for healthy food choices on a budget. Pod 3 also works with Cornell Cooperative Extension to provide nutrition support in both practices and offsite locations for patients and families. Pod 3 practices have organized a Pediatric Obesity Initiative that focuses on linking families to community resources for healthy lifestyle changes that combat obesity. In Pod 1, practices mentioned the local hospital's new Bariatric Center and how care coordination services for patients with obesity and related illnesses or complications were improving with this additional service for the community.

Health IT also played a more important role in patient engagement and self-management in Year Two. Many practices activated patient portal software through their EHRs in Year Two to provide patients with access to their medical information and secure messaging with their provider. Patient portals also offer educational materials for specific diseases/conditions, lab results, and imaging results.

In addition, many providers and care managers attributed improvements in self-management during Year Two to the success of care management activities. Practices and Pods reported that patients with chronic illness and high utilizers of health care were more likely to be aware of their practice's medical home features, as practices focus their medical home resources on those patient populations. Providers also noted that patients who interacted directly with nurse care managers or clinical pharmacists were more aware than other patients of the benefits of having a medical home. This was particularly true for diabetic patients, who were becoming more accustomed and satisfied with frequent interactions with their providers to improve self-management of their condition.

Providers engaged in several activities that formally prioritized patient experience with care in the MAPCP Demonstration in Year Two. Several patient advisory boards had been organized at both the Pod and practice levels. One practice reported that they planned to form a patient advisory board during the next year. The pay-for-performance initiative organized by the providers also aimed to redistribute \$.50 of the \$7 PMPM in part on the basis of patient satisfaction ratings.

From February through April 2013, AHI administered the Clinician & Group Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey to adult patients and the parents or guardians of pediatric patients who had visited a practice in the ADK Demonstration within the past 12 months. A sample of 5,127 completed interviews was obtained, for an overall adjusted response rate of 38 percent. Results indicated that practices in the ADK Demonstration met or exceeded most benchmarks based on the national average from the 2011 National CAHPS Benchmarking Database and they improved on most measures. More than half of the sites met the benchmark for overall provider rating.

Communication and office staff CAHPS measures are of high importance to patients and include many areas where practices underperformed again in 2013. All measures related to provider communication improved from the 2012 results, but providers still have room for improvement in listening carefully to patients, showing respect for what patients have to say, and explaining things to patients in an easily understood way. These CAHPS measures only showed marginal or no improvement. Another CAHPS measure that showed little improvement and can be a growth area is the "helpful, courteous, and respectful office staff" composite measure; its score fell below its benchmark. .

Access to care ratings improved significantly on four of the six measures in 2013, but providers fell short of the access composite benchmark. Compared to 2012, significantly fewer patients indicated that they always get an answer to phone questions after hours as soon as needed. Pod 2 again received the lowest rating for after-hours access by phone, despite using feedback from the 2012 survey to try to improve on the measure. Ratings also were low for extended access on evenings, weekends, or holidays in Pods 1 and 3. Results related to self-

management support, shared decision making, adult behavior, child development and child prevention were varied.

### **3.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between the ADK Demonstration and changes in beneficiary experience with care are not yet available. In the final report, we plan to report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

## **3.6 Effectiveness (Utilization & Expenditures)**

### **3.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures During Year Two**

During the 2012 site visit, Pods and practices spoke at length about providing care management services, open-access scheduling and extended hours, and care transition programs for beneficiaries leaving the hospital. These initiatives were implemented with the expressed goal of altering patterns of acute-care and ER utilization and expenditures, and these initiatives continued to be the primary means by which Pods and practices tried to change utilization during the year between the first and second site visits. Through implementation of these various practice and Pod initiatives, New York expects to achieve budget neutrality for the MAPCP Demonstration through a 10 percent reduction each in hospital admissions for ambulatory care sensitive conditions, hospital readmissions, and ER visits, for gross savings to Medicare over 3 years of \$11.5 million and \$3.7 million net of payments to practices. While interviewees did not report any new initiatives implemented over the past year, Pod 2 and its associated practices noted that the past year was spent tweaking the processes for delivering particular services, notably care management, to ensure that they were reaching the patients that needed additional care management services (e.g., newly diagnosed diabetics, patients in need of social services or behavioral health services in addition to medical services, high utilizers of the ER).

ADK Demonstration initiatives were implemented without regard to patients' health insurance coverage. There were no features specifically targeting Medicare or Medicaid beneficiaries, but to the extent that these beneficiaries are in poorer health or are more frequent utilizers of acute-care and emergency care services, practices expected them to experience more significant changes in utilization as a result of medical home activities.

One notable change since the 2012 site visit, for Pod 2 in particular, was the systematic use of data to guide practices' efforts to target patients in need of care management or evidence-based care. In the past year, practices in the Pod completed implementation of Athena, an EHR, and they are using it to improve their tracking of patients who have been admitted to the hospital, readmitted to the hospital, seen in the ER, or those who have not received evidence-based care for select chronic conditions or preventive care screenings (e.g., foot exams for diabetics, pap smears, colonoscopies). Patients are referred to care managers if they are high utilizers of acute or emergency care or they are referred to nursing staff who assist them in securing needed tests and screenings. Several practices associated with Pods 1 and 3 also discussed their use of daily or monthly ER visit reports from local hospitals to call patients who had been in the ER and provide education on the proper use of the ER and the availability of after-hours care. Pod administrators and care managers across all Pods shared that they can receive ER information almost real-time from local hospitals to identify patients for follow up patients who were

frequently seen in the ER or hospital or who were recently discharged from the ER or hospital. While providers and Pods expressed frustration with the lack of some data (e.g., quality of care), they were uniformly pleased with the improvement of real-time data to identify and target high utilizers of the ER.

Other sources of utilization data were used to a lesser extent to support practices' activities. As previously discussed in **Section 3.1.3**, several practices and one provider association suggested that the utilization reports generated by Treo are not actionable for their day-to-day clinic operations because the utilization data are too dated and are not captured over different points in time to analyze trends. In contrast, the Medicare practice feedback reports and beneficiary utilization files were used more frequently. The Pod managers access the Medicare beneficiary utilization files and practice feedback reports and distribute them as needed to the practices. Some practices were familiar with these files and reports and found them actionable because the data were relatively more recent, but other practices, particularly in Pod 1, were still unaware of these practice-specific data.

Over the past year, New York continued to implement a pay-for-performance initiative that was expected to affect utilization and expenditures. There were challenges making the first series of performance payments because of inconsistencies in calculating the claims-based measures, but New York hopes to have all issues resolved in early 2014.

Many stakeholders, including payers, Pods, practices, and AHI, relayed findings suggesting a decrease in hospital admissions, hospital readmissions, and ER visits among patients in the ADK Demonstration. For example, one payer reported that they have data to show utilization has slowed and PMPM costs have decreased, and they believe this is due to reduced acute-care utilization. The same payer, however noted that their results are only suggestive and that it takes time to see significant cost savings. Another payer reported that they are relying on the expenditure analyses conducted by Treo to determine if there are any meaningful changes in expenditures as a result of the ADK Demonstration. A third payer suggested the ADK Demonstration had yet to generate cost savings.

Pod 2 noted that they are seeing reductions in inpatient admission and readmission rates on the order of 7 to 13 percent, depending on the measure, among the patients in their practices. Several practices in Pods 1 and 3, both anecdotally and based on evidence in recent RTI Practice Feedback Reports, reported decreased acute and emergency care utilization. It remains unclear how well these practices and Pods are tracking these data systematically to support their assertions. Several practices across all Pods discussed the fact that the area hospitals in the Adirondacks saw a marked decrease in inpatient admissions over the past year, so much so that the hospitals were having financial difficulties. Some practices cautioned that there could be many reasons for this besides their medical home efforts, including changes in health insurance copayments for nonemergency ER use and state or national trends. On balance, the general consensus from the site visit interviews is that there is still little evidence that cost savings are being generated from the ADK Demonstration, but that changes in utilization have occurred.

### **3.6.2 Changes in Utilization and Expenditures**

**Tables 3-7 and 3-8** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between the ADK Demonstration and two comparison groups:

PCMHs and non-PCMHs. **Table 3-7** contains measures of total expenditures as well as specific categories of expenditures that are expected to be impacted by the implementation of the ADK Demonstration. Estimates in this table are interpreted as the difference in the rate of growth in per beneficiary per month (PBPM) expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. The ADK Demonstration is expected to reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether the ADK Demonstration is associated with the intended utilization changes in these care categories we examined acute-care, post-acute-care, ER, specialty physician, and imaging expenditures. We also analyze the changes in all-cause admissions and all-cause ER visits measured as rates per 1,000 beneficiary quarters. **Table 3-8** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an increase in the rate of events.

The ADK Demonstration is also expected to result in higher utilization of certain types of services. In particular, we expect that the demonstration will increase the utilization of primary care, home-based care, and outpatient services (includes care received at hospital outpatient departments, FQHCs, and rural health clinics [RHCs]). These services are captured in our measures of primary care physician expenditures, home health expenditures, and outpatient expenditures. Positive regression coefficients indicate that the ADK Demonstration is associated with the expected increase in use of these services.

As described above, the ADK Demonstration is expected to decrease the use of some services while increasing the use of others. Overall the MAPCP Demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyze the average overall Medicare PBPM expenditures and look for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 3.6.4**.

**Table 3-7**  
**New York: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 21,481)	-28.37	[-58.38, 1.65]	2.55	[-23.33, 28.42]
Year Two (N = 22,767)	-25.35	[-52.93, 2.22]	-36.37*	[-68.63, -4.11]
Overall (N = 24,755)	-26.82*	[-50.43, -3.22]	-17.36	[-38.81, 4.09]
Acute-care				
Year One (N = 21,481)	-19.73*	[-34.93, -4.52]	9.80	[-5.01, 24.61]
Year Two (N = 22,767)	-35.79*	[-52.56, -19.02]	-29.28*	[-50.43, -8.13]
Overall (N = 24,755)	-27.94*	[-39.57, -16.32]	-10.19	[-22.75, 2.38]

(continued)

**Table 3-7 (continued)**  
**New York: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Post-acute-care				
Year One (N = 21,481)	-3.66	[-12.88, 5.56]	-3.35	[-11.02, 4.32]
Year Two (N = 22,767)	-0.38	[-10.24, 9.49]	-3.30	[-13.00, 6.40]
Overall (N = 24,755)	-1.98	[-10.40, 6.44]	-3.32	[-10.49, 3.85]
ER visits not leading to hospitalization				
Year One (N = 21,481)	7.64*	[4.90, 10.39]	5.01*	[0.66, 9.36]
Year Two (N = 22,767)	2.66	[-0.46, 5.77]	1.58	[-1.76, 4.91]
Overall (N = 24,755)	5.09*	[2.49, 7.70]	3.25	[-0.28, 6.79]
Outpatient				
Year One (N = 21,481)	12.66*	[5.61, 19.72]	12.20*	[1.56, 22.85]
Year Two (N = 22,767)	22.86*	[15.30, 30.43]	11.30	[-1.23, 23.84]
Overall (N = 24,755)	17.88*	[11.30, 24.46]	11.74*	[1.01, 22.48]
Specialty physician				
Year One (N = 21,481)	-8.23*	[-13.82, -2.65]	-2.85	[-8.39, 2.69]
Year Two (N = 22,767)	-5.42	[-11.80, 0.97]	-5.55*	[-9.52, -1.57]
Overall (N = 24,755)	-6.79*	[-12.41, -1.17]	-4.23*	[-8.12, -0.34]
Primary care physician				
Year One (N = 21,481)	-4.88*	[-8.54, -1.22]	-1.77	[-4.21, 0.66]
Year Two (N = 22,767)	-6.50*	[-9.51, -3.49]	-3.78*	[-6.46, -1.11]
Overall (N = 24,755)	-5.71*	[-8.94, -2.48]	-2.80*	[-5.19, -0.42]
Home health				
Year One (N = 21,481)	-5.06*	[-8.66, -1.45]	-7.44*	[-12.17, -2.71]
Year Two (N = 22,767)	-1.16	[-5.11, 2.79]	-3.23	[-7.42, 0.96]
Overall (N = 24,755)	-3.06	[-6.49, 0.36]	-5.29*	[-9.58, -1.00]
Other non-facility				
Year One (N = 21,481)	-4.57*	[-7.67, -1.48]	-1.88	[-4.56, 0.80]
Year Two (N = 22,767)	-3.44*	[-6.76, -0.11]	-3.61*	[-6.43, -0.78]
Overall (N = 24,755)	-3.99*	[-6.64, -1.35]	-2.76*	[-4.60, -0.92]
Laboratory				
Year One (N = 21,481)	-2.48*	[-3.58, -1.37]	-0.88*	[-1.67, -0.10]
Year Two (N = 22,767)	-2.19*	[-3.34, -1.05]	-1.24*	[-2.11, -0.38]
Overall (N = 24,755)	-2.33*	[-3.34, -1.33]	-1.07*	[-1.84, -0.30]
Imaging				
Year One (N = 21,481)	-2.49*	[-3.60, -1.38]	-2.07*	[-3.23, -0.92]
Year Two (N = 22,767)	-3.54*	[-5.16, -1.93]	-3.67*	[-4.89, -2.44]
Overall (N = 24,755)	-3.03*	[-4.29, -1.77]	-2.89*	[-4.00, -1.78]

(continued)

**Table 3-7 (continued)**  
**New York: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Other facility				
Year One (N = 21,481)	-0.47	[-1.58, 0.64]	-0.16	[-1.46, 1.15]
Year Two (N = 22,767)	0.96	[-0.91, 2.83]	1.42	[-0.66, 3.50]
Overall (N = 24,755)	0.26	[-0.87, 1.39]	0.65	[-0.58, 1.88]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower* growth in expenditures relative to the CG. A *positive* value corresponds to *faster* growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$26.82 slower among beneficiaries in ADK Demonstration practices relative to beneficiaries in PCMH practices. Relative to beneficiaries in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **total Medicare expenditures**, though the *overall* estimate is not statistically significant.
- The *overall* growth in **acute-care expenditures** is \$27.94 slower among beneficiaries in ADK Demonstration practices relative to beneficiaries in PCMH practices. Relative to beneficiaries in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **acute-care expenditures** even though the *overall* estimate is not statistically significant.
- The *overall* growth in **expenditures for ER visits not leading to hospitalization** is \$5.09 faster among beneficiaries in ADK Demonstration practices relative to beneficiaries in PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this trend will persist into Year Three.
- The *overall* growth in **outpatient (including FQHCs) expenditures** is faster among beneficiaries in ADK Demonstration practices relative to both beneficiaries in PCMH and non-PCMH practices. The lack of statistical significance relative to non-PCMH

practices in Year Two, however, makes it uncertain whether this association will persist into Year Three.

- The *overall* growth in **expenditures for specialty physicians and primary care physicians** is slower among beneficiaries in ADK Demonstration practices relative to both beneficiaries in PCMH and non-PCMH practices. The lack of statistical significance in the estimate in Year Two of **expenditures for specialty physicians** relative to PCMH practices, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **home health expenditures** is slower among beneficiaries in ADK Demonstration practices relative to beneficiaries in non-PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **laboratory, imaging, and other non-facility expenditures** is slower relative to both beneficiaries in PCMH and non-PCMH practices.

**Table 3-8**  
**New York: Comparison of average change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All cause admissions				
Year One (N = 21,481)	-6.80*	[-11.10, -2.51]	-1.91	[-6.38, 2.57]
Year Two (N = 22,767)	-10.72*	[-16.09, -5.34]	-6.01*	[-10.66, -1.37]
Overall (N = 24,755)	-8.81*	[-12.89, -4.72]	-4.01*	[-7.77, -0.24]
ER visits not leading to hospitalization				
Year One (N = 21,481)	1.38	[-5.08, 7.84]	-4.53	[-14.46, 5.39]
Year Two (N = 22,767)	-2.51	[-9.14, 4.12]	-3.29	[-11.08, 4.50]
Overall (N = 24,755)	-0.61	[-5.95, 4.72]	-3.90	[-11.73, 3.94]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in the rate of **all-cause admissions** among MAPCP Demonstration beneficiaries by 8.81 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in the rate of **all-cause admissions** among MAPCP Demonstration beneficiaries by 4.01 per 1,000 beneficiary quarters.

### 3.6.3 Medicare Budget Neutrality in Year Two of the ADK Demonstration

#### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention, absent any fees paid on behalf of Medicare. Estimates of gross savings for New York through Year Two of the demonstration are based on the sum of eight quarter-specific MAPCP Demonstration cost regression coefficients comparing beneficiaries attributed to MAPCP Demonstration practices to beneficiaries attributed to PCMH comparison practices. Negative cost estimates denote savings, as the growth in MAPCP Demonstration costs was smaller than in the comparison group. Positive cost estimates denote *dissavings*, as the growth in MAPCP Demonstration costs exceeded that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares with the beneficiary quarter as the unit of analysis.

#### MAPCP Demonstration Fees

In the MAPCP Demonstration, CMS is paying monthly medical home fees to ADK practices for Medicare assigned demonstration beneficiaries, a portion of which is going to the Pods to support care coordination activities. New York determined the share of the fees from CMS that are paid to practices and other participating organizations. Total monthly fees paid by Medicare are aggregated to the quarter level from claims submitted on behalf of the practices and other participating organizations. Budget neutrality, or net savings, is determined on a yearly (or multiple-year) basis by subtracting all fees paid during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality are slightly lower than the actual fees paid. This is because the savings regression model excludes beneficiaries who were eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees are also calculated excluding beneficiaries with fewer than 3 months of demonstration eligibility.

#### Statistical Tests of Budget Neutrality

This regression methodology allows for statistical tests of confidence that CMS and the states can place in any estimated savings. Three tests are conducted.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration intervention associated with a lower level of costs in one or more demonstration quarters during the first 2 years?*

2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower MAPCP Demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings had to be positive, implying systematically lower MAPCP Demonstration expenditures relative to the PCMH comparison group and controlling for beneficiary and practice characteristics.
3. The third test requires that total gross savings exceeds total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid out?*

### **Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures**

In addition to the statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration into perspective. The first measure is the return on investment (RoI) of fees, which is the ratio of total gross savings to total fees paid by the MAPCP Demonstration. RoI answers the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implies budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among MAPCP Demonstration beneficiaries in the absence of the demonstration. This unobservable occurrence is estimated by taking average Medicare expenditures observed in the comparison group and multiplying them by the number of MAPCP Demonstration beneficiaries. Viewing the total gross savings in context of this number answers the question: What was Medicare's savings as a percentage of all expenditures? Since both of these ratios are based on total gross savings, a statistically significant estimate of total gross savings is necessary to ensure confidence in their validity.

**Tables 3-9a–c** report the estimated gross and net savings for New York during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 3-9a**  
**New York: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2011 : Q3 (Jul–Sept)	2011 : Q4 (Oct–Dec)	2012 : Q1 (Jan–Mar)	2012 : Q2 (Apr–Jun)	
Difference in quarterly expenditures per beneficiary (A)	-\$33.71	-\$115.36	-\$113.54	-\$78.12	-\$85.10
Eligible beneficiary quarters (B)	19,003	18,923	19,054	19,733	76,714
Total gross savings (C = -A*B)	\$640,688	\$2,182,854	\$2,163,412	\$1,541,598	\$6,528,551
Total MAPCP Demonstration fees (D)	\$396,330	\$393,688	\$395,541	\$412,755	\$1,598,315
Net savings (E = C-D)	\$244,357	\$1,789,165	\$1,767,870	\$1,128,843	\$4,930,236
Average expenditures (PCMH comparison group) (F)	\$2,091	\$2,300	\$2,273	\$2,346	\$2,253
Total expenditures (PCMH comparison group) (G = F*B)	\$39,735,273	\$43,522,900	\$43,309,742	\$46,293,618	\$172,861,533
Average expenditures (MAPCP Demonstration) (H)	\$2,052	\$2,172	\$2,165	\$2,225	\$2,154
Total expenditures (MAPCP Demonstration) (I = H*B)	\$38,994,156	\$41,100,756	\$41,251,910	\$43,905,925	\$165,252,747

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible (MAPCP) Demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A \* B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees, excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in comparison group. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (Comp) (F\*B): Weighted average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2011:Q3-2013:Q2.

**Table 3-9b**  
**New York: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	
Difference in quarterly expenditures per beneficiary (A)	\$52.62	-\$163.53*	-\$78.92	-\$112.81	-\$76.05
Eligible beneficiary quarters (B)	20,002	20,394	19,996	19,927	80,318
Total gross savings (C = -A*B)	-\$1,052,463	\$3,335,048	\$1,577,999	\$2,247,984	\$6,108,568
Total MAPCP Demonstration fees (D)	\$418,668	\$428,111	\$410,268	\$402,716	\$1,659,763
Net savings (E = C-D)	-\$1,471,131	\$2,906,937	\$1,167,732	\$1,845,268	\$4,448,805
Average expenditures (PCMH comparison group) (F)	\$2,112	\$2,332	\$2,176	\$2,304	\$2,231
Total expenditures (PCMH comparison group) (G = F*B)	\$42,244,224	\$47,558,808	\$43,511,296	\$45,911,808	\$179,226,136
Average expenditures (MAPCP Demonstration) (H)	\$2,175	\$2,198	\$2,208	\$2,201	\$2,196
Total expenditures (MAPCP Demonstration) (I = H*B)	\$43,504,350	\$44,826,012	\$44,151,168	\$43,859,327	\$176,340,857

NOTES:

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A \* B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees, excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in comparison group. Weights represent product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (Comp) (F\*B): Weighted average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2011:Q3-2013:Q2.

**Table 3-9c**  
**New York: Estimates of gross savings, fees paid, and net savings, all years**

	Year One and Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	-\$80.47*	-\$151.28	-\$9.67
Eligible beneficiary quarters (B)	157,032	—	—
Eligible beneficiaries overall	24,755	—	—
Total gross savings (C = -A*B)	\$12,637,119*	\$1,518,023	\$23,756,215
Total MAPCP Demonstration fees (D)	3,258,078	—	—
Net savings (E = C-D)	\$9,379,041	-\$1,740,055	\$20,498,137
Average expenditures (PCMH comparison group) (F)	\$2,242	—	—
Total expenditures (PCMH comparison group) (G = F*B)	\$352,087,669	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,175	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$341,593,604	—	—
Return on fees (J = C/D)	3.88	—	—
Gross savings per comparison expenditures (K = C/G)	0.036	—	—

NOTES:

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A \* B): Weighted average of the quarterly difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (Comp) (F\*B): Average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(J) Return on fees (J = C/D): Total gross savings divided by total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2011:Q3-2013:Q2.

- Estimated differences in ADK Demonstration costs per beneficiary, relative to the comparison group, range from a positive \$52.62 (2012: Quarter 3) to a negative \$163.53 (2012: Quarter 4) [*Tables 3-9a–b*]. While estimates in seven of the eight

quarters are negative, only in one quarter (2012: Quarter 4) are they statistically significant.

- Estimated total gross savings to Medicare is a positive \$12,637,119 [**Table 3-9c: C**]. The confidence interval (2-sided; 90 percent level) ranged between \$1.5 million and \$23.8 million in savings, indicating that the observed total gross savings was statistically significant. Net savings were estimated at \$9,379,041, but were not statistically significant.
- The \$12.6 million gross savings estimate is 3.6 percent of the estimated \$352 million in comparison group costs weighted by ADK eligible beneficiaries [**Table 3-9c: K**].
- Total fees paid out on the basis of ADK-eligible quarters were \$3,258,078 [**Table 3-9c: D**], or \$6.92 per eligible month.<sup>2</sup> This is consistent with the \$7 fee that New York reportedly paid practices. The fees averaged slightly less than 1 percent of total Medicare expenditures for health services by ADK eligible beneficiaries during the demonstration's first 2 years [**Table 3-9c: I**].
- This translates into a positive Medicare RoI of fees of 3.88 (\$12,637,119/\$3,258,078) [**Table 3-9c: J**].

### 3.6.4 Discussion of Effectiveness

The ADK Demonstration intends to achieve slower growth in expenditures and health care utilization through improved access to care through 24/7 access and open scheduling, delivery of care management services to beneficiaries in need of additional support, follow-up after discharge from the hospital or ER, and significant use of medical record data to identify gaps in needed care. According to stakeholders, these transformations are meant to lower high-cost utilization, such as inpatient and ER care and increase the use of lower cost services, such as ambulatory and outpatient facility services, resulting in possible reductions in the rate of expenditure growth. Overall, there was evidence of a slower growth rate for total Medicare expenditures among beneficiaries in the ADK Demonstration compared to the PCMH comparison group. While there was no overall significant decrease in total Medicare expenditures relative to the non-PCMH comparison group, a significant decrease in Year Two suggests a trend toward an overall decrease. These results are encouraging and in alignment with the goals of the ADK Demonstration.

During the site visit, many providers and care managers shared anecdotal evidence of reduced rates of ER and inpatient use. The ADK Demonstration did see a significant relative decrease in Year Two in the growth for acute-care expenditures and inpatient use relative to the two comparison groups. The strongest evidence for slower growth is in Year Two which suggests that altering patterns of care took time, and we will assess this in more detail in Year Three.

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<sup>2</sup> Fees per eligible month equal the total fees divided by MAPCP Demonstration eligible months. Eligible months equal eligible quarters multiplied by 3.

The slower growth rates in primary care expenditures relative to the comparison groups was unexpected given the focus on improving access to primary care providers. Providers and stakeholders noted that while there have been improvements in access, there are still significant shortages of primary care providers in the Adirondack region. This could have an impact on primary care expenditures. Another potential explanation is the increased use of alternative means of reaching a provider for questions, other than the standard visit. For example, some practices discussed the expanding role of the patient portal and the slow but steady growth in the number of patients using it to contact the provider.

In summary, we are seeing evidence of slower rates of expenditure growth in certain categories of expenditures along with the beginnings of budget neutrality relative to PCMH practices. All of these will be closely monitored during Year Three. Site visit interviewees were uniformly in agreement that altering patterns of care takes time, and any significant changes in patterns might not be apparent until several years into practice transformation.

### **3.7 Special Populations**

#### **3.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

While New York did not specify any special populations to be targeted at the state level in its MAPCP Demonstration application, the Pods have focused on certain subgroups within their respective regions. During Year One, the Pods focused mostly on beneficiaries with chronic conditions, such as diabetes, COPD, and CHF. In the past year, the ADK Demonstration targeted populations of interest primarily through its care management programs. Pod 2 continued to focus its care management resources on patients considered at high risk of complications from chronic conditions, but also began to put more emphasis on helping patients with social and behavioral needs. Pod's 2 Care managers' work on addressing the social needs of patients so that they could focus more closely on self-management of their medical condition. Pod 2 utilizes the risk scores provided in RTI's Beneficiary Utilization Reports and other payer-specific reports to identify high-risk beneficiaries. Pods 1 and 3 reported focusing on high utilizers of hospital services, including inpatient admissions and ER visits.

While some practices shifted the focus of their care management programs from disease-specific to individual risk factors, the Pods continued to provide additional services for certain chronic conditions. Pod 2 began using pre-visit planners to verify that patients coming in with three important conditions (diabetes, coronary artery disease, and hypertension) had the appropriate screenings and exams. Pod 1 focused on diabetics by providing free diabetes education. Pod 3 standardized the CHF education it provides to its beneficiaries. A new focus in the past year for Pods 2 and 3 was asthma care. Pod 2 brought in drug company representatives to educate staff about appropriate asthma treatments and updated asthma templates and action plans in their physicians' offices. One provider in Pod 3 reported trying to improve the capture of data and to streamline office processes related to asthma.

#### **3.7.2 Changes Experienced by Special Populations**

In all states, we provide quantitative analysis of the association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries.

These special populations include beneficiaries with specific conditions that could lead to higher utilization of health care (beneficiaries with multiple chronic conditions, behavioral health conditions, or disabilities) or those who may experience disparities in access to and quality of health care (beneficiaries who are dually eligible for Medicare and Medicaid, live in rural areas, or belong to racial/ethnic minorities). As requested by the state, we also examine the association between the MAPCP Demonstration and changes experienced by each of the three Pods separately; we did not examine racial/ethnic minorities.

**Table 3-10** reports covariate-adjusted differences in total Medicare spending PBPM across the MAPCP Demonstration and two comparison groups—PCMHS and non-PCMHS—for all eight special populations. Estimates in **Table 3-10** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to faster growth.

The next five tables, **Tables 3-11** through **3-15**, examine the changes associated with the MAPCP Demonstration for beneficiaries with multiple chronic conditions. Care management might be expected to have a greater impact on the outcomes for this population than for the Medicare population in general, and for this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population in all states.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in 2 consecutive years of Medicare claims. To identify chronic conditions, we used the Chronic Condition Indicator algorithm, developed by the Agency for Healthcare Research and Quality (AHRQ) as part of the Healthcare Cost and Utilization Project (discussed in more detail in Appendix D). The algorithm classifies diagnosis codes from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) as either chronic or non-chronic and is updated each year. A chronic condition is defined as one lasting 12 months or longer and meeting one or both of the following conditions: (a) it limits a person's ability to care for themselves, live independently, or interact with others; (b) it requires ongoing intervention with medical products, services, and/or special equipment. In addition, beneficiaries must also be in the CMS-HCC high-risk category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 24 percent of ADK beneficiaries fit this profile in New York.

Medicare beneficiaries with behavioral health conditions are another population with greater health needs who could benefit more from care management, relative to the Medicare populations in general. This population also has expenditures and utilization that are directly identifiable as due to behavioral health conditions. In all states, we report the changes associated with the MAPCP Demonstration on a selection of overall and behavioral health-specific expenditure and utilization outcomes, in **Table 3-16** and **Table 3-17**.

For the remaining special populations listed above, we provide additional analyses of the association between the MAPCP Demonstration and selected expenditure and utilization outcomes only if the MAPCP Demonstration is associated with a statistically significant change in total Medicare expenditures, as reported in **Table 3-10**. For these special populations, we report the outcomes requested by CMS, which are acute-care expenditures, outpatient ER expenditures, primary care physician expenditures, specialty care physician expenditures, acute hospital visits, outpatient ER visits, and readmissions, to gain a better understanding of the

significant reductions in total Medicare expenditures. In New York, these outcomes for disabled beneficiaries are reported in **Table 3-18** and for beneficiaries attributed to practices in Pod 2 in **Table 3-19**.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 3.7.3**.

**Table 3-10**  
**New York: Comparison of average change estimates for total PBPM Medicare expenditures among special populations: First 2 years of MAPCP Demonstration**

Population	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Multiple chronic conditions only				
Year One (N = 5,347)	-67.54	[-178.29, 43.21]	-32.87	[-118.00, 52.25]
Year Two (N = 5,284)	-66.99	[-165.95, 31.96]	-94.97	[-191.29, 1.36]
Overall (N = 6,014)	-67.27	[-159.61, 25.06]	-63.29	[-131.86, 5.29]
Behavioral health conditions only				
Year One (N = 3,257)	-23.59	[-93.70, 46.52]	-33.80	[-113.94, 46.34]
Year Two (N = 3,354)	-88.28*	[-163.05, -13.52]	-71.23	[-143.54, 1.08]
Overall (N = 3,791)	-56.25	[-114.11, 1.61]	-52.70	[-112.40, 7.01]
Disabled beneficiaries only				
Year One (N = 6,858)	-34.25	[-93.29, 24.78]	-21.91	[-88.76, 44.94]
Year Two (N = 7,241)	-39.02	[-83.85, 5.80]	3.50	[-48.81, 55.81]
Overall (N = 7,939)	-36.69*	[-72.62, -0.75]	-8.96	[-53.89, 35.98]
Dually eligible beneficiaries only				
Year One (N = 5,165)	11.42	[-44.43, 67.27]	-11.47	[-79.14, 56.21]
Year Two (N = 5,366)	-29.71	[-91.53, 32.11]	23.04	[-35.94, 82.02]
Overall (N = 5,895)	-9.32	[-61.49, 42.85]	5.94	[-46.19, 58.06]
Rural beneficiaries only				
Year One (N = 4,143)	-12.32	[-87.87, 63.24]	-11.59	[-82.41, 59.23]
Year Two (N = 4,337)	20.95	[-36.54, 78.44]	97.13*	[37.06, 157.20]
Overall (N = 4,668)	4.62	[-56.90, 66.14]	43.78	[-11.00, 98.55]
Pod 1 and all comparisons				
Year One (N = 2,873)	1.67	[-32.30, 35.65]	32.15*	[2.40, 61.90]
Year Two (N = 2,981)	-27.11	[-58.42, 4.20]	-38.95*	[-73.77, -4.14]
Overall (N = 3,206)	-13.17	[-41.43, 15.09]	-4.51	[-30.22, 21.20]
Pod 2 and all comparisons				
Year One (N = 8,277)	-43.87*	[-76.67, -11.07]	-13.93	[-43.08, 15.23]
Year Two (N = 8,914)	-49.44*	[-86.55, -12.33]	-60.70*	[-101.14, -20.25]
Overall (N = 9,729)	-46.72*	[-71.30, -22.14]	-37.86*	[-60.32, -15.40]

(continued)

**Table 3-10 (continued)**  
**New York: Comparison of average change estimates for total PBPM Medicare expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Pod 3 and all comparisons				
Year One (N = 10,331)	-25.55	[-64.63, 13.53]	6.35	[-29.46, 42.17]
Year Two (N = 10,872)	-4.57	[-38.75, 29.62]	-15.74	[-53.46, 21.97]
Overall (N = 11,820)	-14.85	[-47.50, 17.81]	-4.92	[-35.87, 26.03]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower* growth in expenditures relative to the CG. A *positive* value corresponds to *faster* growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- The participating practices are grouped into three geographical “Pods”: Tri-Lakes (Pod 1), Lake George (Pod 2), and Northern Adirondacks (Pod 3). Each Pod, described as a “mini disease management company,” supports practices in its subregion with shared services for patient outreach, health education, self-management, community resource integration, and care coordination.
- The Pods are unique to the ADK Demonstration; there are no CG beneficiaries in a Pod. “Pod 1/2/3 and all comparisons” means that beneficiaries in each Pod were compared to all PCMH CG beneficiaries and all non-PCMH CG beneficiaries.

ADK = Adirondack; CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The overall growth in total Medicare expenditures is \$36.69 slower among disabled beneficiaries in ADK Demonstration practices relative to disabled beneficiaries in PCMH practices.
- The overall growth in total Medicare expenditures is \$46.72 slower among Pod 2 beneficiaries in ADK Demonstration practices relative to Pod 2 beneficiaries in PCMH practices.
- The overall growth in total Medicare expenditures is \$37.86 slower among Pod 2 beneficiaries in ADK Demonstration practices relative to Pod 2 beneficiaries in non-PCMH practices.
- Relative to rural beneficiaries in comparison PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in total Medicare

expenditures among beneficiaries with behavioral health conditions in ADK Demonstration practices, though the *overall* estimate is not statistically significant.

- Relative to rural beneficiaries in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards faster growth in total Medicare expenditures among rural beneficiaries in ADK Demonstration practices, though the *overall* estimate is not statistically significant.

Although there was no significant association between the ADK Demonstration and total Medicare expenditures among beneficiaries with multiple chronic conditions in ADK practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on outcomes for this population. In the next subsection, we further explore the association between the ADK Demonstration and Medicare beneficiaries with multiple chronic conditions.

### **Beneficiaries with Multiple Chronic Conditions**

Care management could potentially have greater effects on populations with multiple chronic conditions than on the general population. In the next five tables, we consider the association between the ADK Demonstration and the subpopulation of beneficiaries with multiple chronic conditions, looking at quality of care, access to care, and expenditures among this population. The ADK Demonstration group and the PCMH and non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions. Estimates in **Table 3-11** are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of the receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care while a *positive* value corresponds to an *increase* in the likelihood. ADK beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 3-12**. Estimates in **Table 3-12** are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the ADK Demonstration is associated with improved access to ambulatory care, we would expect ADK beneficiaries with multiple chronic conditions to have reduced rates (i.e., a significant negative value) of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 3.3.2**.

**Table 3-11**  
**New York: Comparison of average change estimates for process of care indicators among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 1,342)	-0.54	[-4.12, 3.05]	0.35	[-2.94, 3.64]
Year Two (N = 967)	3.33	[-1.07, 7.74]	-2.85	[-7.82, 2.12]
Overall (N = 1,384)	1.05	[-2.43, 4.54]	-0.96	[-4.11, 2.18]
Retinal eye examination				
Year One (N = 1,342)	3.22*	[0.15, 6.29]	-0.32	[-5.50, 4.87]
Year Two (N = 967)	2.33	[-1.07, 5.73]	8.64*	[0.63, 16.66]
Overall (N = 1,384)	2.86*	[0.32, 5.39]	3.37	[-1.65, 8.38]
LDL-C screening				
Year One (N = 1,342)	2.05	[-2.44, 6.54]	-2.24	[-7.95, 3.47]
Year Two (N = 967)	2.99	[-1.30, 7.28]	0.93	[-7.95, 9.81]
Overall (N = 1,384)	2.44	[-1.29, 6.16]	-0.94	[-7.26, 5.38]
Medical attention for nephropathy				
Year One (N = 1,342)	-3.56	[-8.21, 1.09]	7.23*	[1.12, 13.34]
Year Two (N = 967)	-3.73	[-9.65, 2.20]	3.87	[-3.32, 11.05]
Overall (N = 1,384)	-3.63	[-8.45, 1.19]	5.85*	[0.12, 11.58]
Received all 4 diabetes tests				
Year One (N = 1,342)	3.70	[-0.40, 7.80]	1.82	[-2.69, 6.34]
Year Two (N = 967)	3.98	[-1.16, 9.13]	4.67	[-4.09, 13.44]
Overall (N = 1,384)	3.81	[-0.22, 7.84]	2.99	[-2.35, 8.33]
Received none of the 4 diabetes tests				
Year One (N = 1,342)	-0.55	[-3.17, 2.08]	1.32	[-0.94, 3.59]
Year Two (N = 967)	-0.20	[-3.65, 3.24]	2.99*	[0.38, 5.60]
Overall (N = 1,384)	-0.41	[-3.09, 2.28]	2.01	[-0.02, 4.04]
Total lipid panel				
Year One (N = 2,942)	2.71	[-0.82, 6.24]	1.03	[-2.42, 4.48]
Year Two (N = 2,048)	3.63	[-0.77, 8.02]	0.46	[-3.48, 4.40]
Overall (N = 3,174)	3.07	[-0.41, 6.56]	0.80	[-2.48, 4.09]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among MAPCP Demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

ADK = Adirondack Medical Home Demonstration; CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with an increase in the likelihood that MAPCP Demonstration beneficiaries with multiple chronic conditions received a **retinal eye examination** by 2.86 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards increased the likelihood that MAPCP Demonstration beneficiaries with multiple chronic conditions in ADK Demonstration practices received a **retinal eye examination**, though the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the overall estimate indicates that the ADK Demonstration is associated with an increase in the likelihood that MAPCP Demonstration beneficiaries with multiple chronic conditions received **medical attention for nephropathy** by 5.85 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards increased the likelihood that MAPCP Demonstration beneficiaries with multiple chronic conditions in ADK Demonstration practices received **none of the four diabetes tests**, though the *overall* estimate is not statistically significant.

**Table 3-12**  
**New York: Comparison of average change estimates for health outcomes among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 5,347)	-0.95	[-4.25, 2.35]	0.84	[-1.80, 3.48]
Year Two (N = 5,284)	-4.17	[-9.71, 1.38]	-4.79	[-11.30, 1.73]
Overall (N = 6,014)	-2.53	[-6.29, 1.24]	-1.92	[-5.23, 1.39]
Preventable admissions—overall <sup>2</sup>				
Year One (N = 5,347)	-7.28*	[-13.24, -1.33]	-8.42	[-18.75, 1.91]
Year Two (N = 5,284)	-5.73	[-14.19, 2.74]	-9.55	[-23.64, 4.54]
Overall (N = 6,014)	-6.52*	[-12.81, -0.23]	-8.97	[-20.46, 2.52]

(continued)

**Table 3-12 (continued)**  
**New York: Comparison of average change estimates for health outcomes among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Preventable admissions—acute conditions <sup>3</sup>				
Year One (N = 5,347)	-4.48	[-9.40, 0.44]	-3.41	[-7.47, 0.66]
Year Two (N = 5,284)	-1.66	[-5.24, 1.93]	-8.13	[-17.91, 1.66]
Overall (N = 6,014)	-3.10	[-6.77, 0.58]	-5.72	[-12.16, 0.72]
Preventable admissions—chronic conditions <sup>4</sup>				
Year One (N = 5,347)	-2.75	[-6.55, 1.05]	-4.68	[-12.94, 3.59]
Year Two (N = 5,284)	-4.37	[-11.57, 2.83]	-0.85	[-5.70, 4.00]
Overall (N = 6,014)	-3.54	[-8.60, 1.51]	-2.80	[-8.76, 3.16]

NOTES:

- All measures are rates per 1,000 person quarters.
  - Numbers in parentheses represent sample sizes of unique ADK Demonstration participants with multiple chronic conditions who were eligible for the measure.
  - Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
  - A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
  - Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- <sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.
- <sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.
- <sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.
- <sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

ADK = Adirondack Medical Home Demonstration; PCMH = patient-centered medical home; CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in the rate of **overall preventable admissions** among MAPCP Demonstration beneficiaries with multiple chronic conditions by 6.52 per 1,000 beneficiary quarters. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.

**Table 3-13** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for the population with multiple chronic conditions. With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events while a *positive* value corresponds to an *increase* in the rate of events.

Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 3.4.2**.

**Table 3-13**  
**New York: Comparison of average change estimates for access to care and coordination of**  
**care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 5,347)	33.29	[-57.06, 123.64]	27.54	[-60.56, 115.65]
Year Two (N = 5,284)	-48.67	[-140.58, 43.23]	9.39	[-99.64, 118.41]
Overall (N = 6,014)	-6.85	[-90.99, 77.28]	18.65	[-75.16, 112.46]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 5,347)	-16.30	[-79.41, 46.81]	-5.54	[-77.10, 66.03]
Year Two (N = 5,284)	-21.81	[-113.39, 69.76]	1.33	[-90.35, 93.00]
Overall (N = 6,014)	-19.00	[-92.23, 54.23]	-2.17	[-78.16, 73.81]

(continued)

**Table 3-13 (continued)**  
**New York: Comparison of average change estimates for access to care and coordination of**  
**care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 5,347)	39.79*	[16.83, 62.75]	23.33	[-10.31, 56.97]
Year Two (N = 5,284)	27.58*	[5.16, 50.00]	10.71	[-15.68, 37.10]
Overall (N = 6,014)	33.81*	[12.51, 55.11]	17.15	[-11.03, 45.34]
Primary care visits as a percentage of total visits (higher quintile = larger percentage)				
Year One (N = 4,560)				
1st quintile	0.44	[-2.65, 3.53]	-1.05	[-5.27, 3.18]
5th quintile	-0.21	[-1.61, 1.20]	0.52	[-1.69, 2.74]
Year Two (N = 3,498)				
1st quintile	5.51*	[1.70, 9.32]	2.44	[-2.01, 6.89]
5th quintile	-2.84*	[-4.89, -0.79]	-1.29	[-3.59, 1.01]
Overall (N = 4,805)				
1st quintile	2.59	[-0.61, 5.79]	0.43	[-3.65, 4.51]
5th quintile	-1.32	[-2.73, 0.08]	-0.25	[-2.30, 1.81]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 1,463)	-15.88	[-80.00, 48.23]	44.73	[-13.31, 102.77]
Year Two (N = 1,282)	-19.01	[-71.75, 33.72]	11.38	[-64.87, 87.64]
Overall (N = 2,240)	-17.32	[-69.94, 35.31]	29.44	[-27.74, 86.62]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 1,798)	-41.32	[-93.43, 10.78]	-12.47	[-43.32, 18.38]
Year Two (N = 1,602)	-24.16	[-64.83, 16.51]	19.50	[-33.94, 72.95]
Overall (N = 2,726)	-33.43	[-75.60, 8.74]	2.23	[-29.15, 33.61]

(continued)

**Table 3-13 (continued)**  
**New York: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care (higher quintile = better continuity of care)				
Year One (N = 5,70)				
1st quintile	5.36*	[2.86, 7.85]	3.57*	[0.73, 6.42]
5th quintile	-3.49*	[-5.07, -1.91]	-2.32*	[-4.30, -0.34]
Year Two (N = 4,552)				
1st quintile	5.78*	[3.32, 8.24]	5.11*	[1.22, 9.00]
5th quintile	-3.46*	[-4.88, -2.04]	-3.18*	[-5.85, -0.51]
Overall (N = 5,831)				
1st quintile	5.54*	[3.38, 7.69]	4.23*	[1.36, 7.09]
5th quintile	-3.48*	[-4.82, -2.14]	-2.69*	[-4.71, -0.67]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among MAPCP Demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

ADK = Adirondack Medical Home Demonstration; CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with an increase in the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries with multiple chronic conditions by 33.81 per 1,000 beneficiary quarters.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, a negative estimate in Year Two suggests a trend towards a decrease in primary care visits as a share of total visits. Specifically, in Year Two the demonstration is associated with a decrease in the likelihood that a MAPCP Demonstration beneficiary with multiple chronic conditions' **primary care visits as a percent of total visits** was in the upper quintile, though the *overall* estimate is not statistically significant. The upper quintile of this measure represents beneficiaries with multiple chronic conditions who had the highest percentage of visits in the primary care setting, while the lower quintile represents beneficiaries who had the lowest percentage of visits in the primary care setting.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in continuity of care, as measured by concentration of visits. Specifically, the demonstration is associated with an increase in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and a decrease in the likelihood that the continuity of care index was in the highest quintile. The lowest quintile represents beneficiaries with multiple chronic conditions whose ambulatory visits were least concentrated with their PCMH providers or providers referred by their PCMH providers, while the higher quintile represents beneficiaries whose visits were most concentrated with their PCMH providers and referred providers.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in continuity of care, as measured by concentration of visits. Specifically, the demonstration is associated with an increase in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and a decrease in the likelihood that the continuity of care index was in the highest quintile. The lowest quintile represents beneficiaries with multiple chronic conditions whose ambulatory visits were least concentrated with their PCMH providers or providers referred by their PCMH providers, while the higher quintile represents beneficiaries whose visits were most concentrated with their PCMH providers and referred providers.

**Tables 3-14** and **3-15** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to MAPCP Demonstration practices and two comparison groups: beneficiaries with multiple chronic conditions attributed to PCMH comparison practices and beneficiaries with multiple chronic conditions attributed to non-PCMHs practices. Estimates in **Table 3-14** are

interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to faster growth.

The MAPCP Demonstration is also expected to result in lower utilization of services such as all-cause admissions and ER care. **Table 3-15** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 3.6.2**.

**Table 3-14**  
**New York: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 5,347)	-67.54	[-178.29, 43.21]	-32.87	[-118.00, 52.25]
Year Two (N = 5,284)	-66.99	[-165.95, 31.96]	-94.97	[-191.29, 1.36]
Overall (N = 6,014)	-67.27	[-159.61, 25.06]	-63.29	[-131.86, 5.29]
Acute-care				
Year One (N = 5,347)	-50.48	[-118.05, 17.09]	19.47	[-32.94, 71.88]
Year Two (N = 5,284)	-91.06*	[-154.16, -27.95]	-68.91*	[-132.08, -5.74]
Overall (N = 6,014)	-70.36*	[-126.63, -14.08]	-23.82	[-67.12, 19.48]
Post-acute-care				
Year One (N = 5,347)	-3.31	[-27.03, 20.42]	-13.20	[-38.56, 12.17]
Year Two (N = 5,284)	-11.15	[-36.13, 13.83]	-10.77	[-32.52, 10.98]
Overall (N = 6,014)	-7.15	[-25.52, 11.23]	-12.01	[-29.51, 5.49]
ER				
Year One (N = 5,347)	9.94*	[4.41, 15.48]	4.75	[-4.68, 14.18]
Year Two (N = 5,284)	1.92	[-4.84, 8.68]	-1.06	[-8.18, 6.06]
Overall (N = 6,014)	6.02*	[1.12, 10.91]	1.90	[-5.25, 9.06]
Outpatient				
Year One (N = 5,347)	25.56*	[9.25, 41.87]	12.87	[-19.32, 45.07]
Year Two (N = 5,284)	44.89*	[27.56, 62.23]	13.58	[-12.25, 39.41]
Overall (N = 6,014)	35.03*	[20.05, 50.01]	13.22	[-13.74, 40.17]
Specialty physician				
Year One (N = 5,347)	-17.37*	[-28.85, -5.89]	-15.80*	[-28.16, -3.43]
Year Two (N = 5,284)	-7.67	[-18.51, 3.17]	-6.16	[-16.90, 4.59]
Overall (N = 6,014)	-12.62*	[-22.62, -2.62]	-11.08*	[-19.45, -2.70]
Primary care physician				
Year One (N = 5,347)	-10.12*	[-19.69, -0.56]	-0.21	[-5.02, 4.60]
Year Two (N = 5,284)	-12.50*	[-19.02, -5.98]	-8.11*	[-13.86, -2.36]
Overall (N = 6,014)	-11.29*	[-18.74, -3.83]	-4.08	[-8.25, 0.09]

(continued)

**Table 3-14 (continued)**  
**New York: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Home health				
Year One (N = 5,347)	-11.41*	[-22.40, -0.43]	-19.39*	[-32.92, -5.85]
Year Two (N = 5,284)	-2.63	[-13.18, 7.92]	-7.35	[-18.51, 3.81]
Overall (N = 6,014)	-7.11	[-17.00, 2.78]	-13.49*	[-25.06, -1.92]
Other non-facility				
Year One (N = 5,347)	-11.76*	[-21.15, -2.36]	-4.86	[-14.59, 4.88]
Year Two (N = 5,284)	-5.75	[-15.72, 4.21]	-8.72	[-20.80, 3.36]
Overall (N = 6,014)	-8.81*	[-15.41, -2.22]	-6.75*	[-13.02, -0.47]
Laboratory				
Year One (N = 5,347)	-3.27*	[-5.33, -1.20]	-0.69	[-2.31, 0.93]
Year Two (N = 5,284)	-2.45*	[-4.43, -0.47]	-0.47	[-2.20, 1.25]
Overall (N = 6,014)	-2.87*	[-4.76, -0.97]	-0.58	[-2.01, 0.85]
Imaging				
Year One (N = 5,347)	-3.36*	[-5.79, -0.92]	-3.38*	[-5.25, -1.51]
Year Two (N = 5,284)	-3.94*	[-6.74, -1.13]	-5.52*	[-8.12, -2.91]
Overall (N = 6,014)	-3.64*	[-6.04, -1.25]	-4.43*	[-6.44, -2.41]
Other facility				
Year One (N = 5,347)	-0.73	[-4.73, 3.27]	-1.07	[-5.84, 3.70]
Year Two (N = 5,284)	5.04	[-5.94, 16.02]	-0.63	[-12.04, 10.79]
Overall (N = 6,014)	2.10	[-4.88, 9.07]	-0.85	[-7.62, 5.91]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower* growth in expenditures relative to the CG. A *positive* value corresponds to *faster* growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There is no statistically significant difference in the overall growth of **total Medicare expenditures** among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in both PCMH practices and non-PCMH practices.

- The *overall* growth in **acute-care expenditures** is \$70.36 slower among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in PCMH practices.
- A negative estimate in Year Two suggests a potential trend in slower **acute-care expenditures** among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices, though the *overall* estimate is not statistically significant.
- The *overall* growth in **ER expenditures** is \$6.02 faster among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **outpatient (including FQHC) expenditures** is \$35.03 faster among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in PCMH practices.
- The *overall* growth in **specialty physician expenditures** is slower among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in PCMH and non-PCMH practices. The lack of statistical significance in Year Two makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **primary care physician expenditures** is \$11.29 slower among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in PCMH practices.
- A negative estimate in Year Two suggests a potential trend in slower **primary care physician expenditures** among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices, though the *overall* estimate is not statistically significant.
- The *overall* growth of **other non-facility, laboratory, and imaging expenditures** is slower among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in PCMH practices.
- The *overall* growth in **home health, other non-facility, and imaging expenditures** is slower among beneficiaries with multiple chronic conditions in ADK Demonstration practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.

**Table 3-15**  
**New York: Comparison of average change estimates for utilization among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 5,347)	-20.57*	[-40.61, -0.53]	-3.67	[-17.17, 9.83]
Year Two (N = 5,284)	-31.62*	[-51.27, -11.98]	-22.03*	[-40.78, -3.28]
Overall (N = 6,014)	-25.98*	[-43.78, -8.19]	-12.66	[-25.37, 0.04]
ER visits not leading to hospitalization				
Year One (N = 5,347)	6.72	[-10.23, 23.67]	-12.26	[-43.86, 19.34]
Year Two (N = 5,284)	-3.37	[-23.05, 16.31]	-5.31	[-24.71, 14.10]
Overall (N = 6,014)	1.78	[-13.39, 16.94]	-8.86	[-31.26, 13.55]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries currently attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the ADK Demonstration is associated with a decrease in the rate of **all-cause admissions** among MAPCP Demonstration beneficiaries with multiple chronic conditions by 25.98 per 1,000 beneficiary quarters. Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards a decreased rate of **all-cause admissions** among MAPCP Demonstration beneficiaries with multiple chronic conditions, though the *overall* estimate is not statistically significant.

Although the MAPCP Demonstration was not associated with significant changes in total Medicare expenditures among beneficiaries with behavioral conditions in ADK Demonstration practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on the outcomes for this population. In the next subsection, we further explore the association between the ADK Demonstration and Medicare beneficiaries with behavioral health conditions.

## Beneficiaries with Behavioral Health Conditions

*Tables 3-16* and *3-17* report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, for Medicare beneficiaries with behavioral health conditions in the ADK Demonstration compared to two comparison groups: PCMHs and non-PCMHs. Research has shown that individuals with psychosocial and substance abuse disorders have substantial unmet need for health care. Within the medical home, significant care management and coordination resources may be required to meet the needs of these patients.

There were no targeted interventions implemented under the ADK Demonstration to improve utilization of health services and quality of care specifically for individuals with mental illness and substance abuse disorders. These individuals are expected to benefit from the initiatives to improve access to, coordination of, and continuity of care with primary care and behavioral health providers. The ADK Demonstration is expected to increase care coordination between primary care providers and behavioral health providers for beneficiaries with mental illnesses and substance use disorders. Improved access and care coordination may increase use of outpatient behavioral health services and primary care visits, and in turn, more appropriate use of outpatient care may lead to decreases in rates of hospitalizations and ER visits (both overall and for behavioral health conditions specifically). Given the potential impact on both non-behavioral health and behavioral service use, we examined both types of service use and expenditures.

For this analysis, beneficiaries with behavioral health conditions were defined as those who had at least one inpatient claim and/or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder in the demonstration year. Using this criterion, on average about 15.1 percent of the study sample (ADK Demonstration and comparison group beneficiaries) was identified as having a behavioral health condition.<sup>3</sup> The expenditure outcomes of interest included: total Medicare expenditures, expenditures for acute hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments.

Service utilization outcomes of interest included: all-cause inpatient admissions, all-cause ER visits, outpatient visits with a principal diagnosis of a behavioral health disorder, inpatient admissions with principal diagnosis of behavioral health disorder, and ER visits with a principal diagnosis of a behavioral health disorder. All utilization measures represent a quarterly rate of visits per 1,000 beneficiaries.

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<sup>3</sup> A behavioral health condition was present in 15.3 percent of beneficiaries in the ADK Demonstration group, 16.1 percent of beneficiaries in the PCMH comparison group, and 14.2 percent of beneficiaries in the non-PCMH comparison group.

**Table 3-16**  
**New York: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 3,257)	-23.59	[-93.70, 46.52]	-33.80	[-113.94, 46.34]
Year Two (N = 3,354)	-88.28*	[-163.05, -13.52]	-71.23	[-143.54, 1.08]
Overall (N = 3,791)	-56.25	[-114.11, 1.61]	-52.70	[-112.40, 7.01]
Acute-care				
Year One (N = 3,257)	-37.55	[-78.17, 3.08]	0.73	[-56.46, 57.92]
Year Two (N = 3,354)	-83.48*	[-129.73, -37.24]	-43.00	[-94.96, 8.96]
Overall (N = 3,791)	-60.74*	[-93.13, -28.35]	-21.35	[-65.97, 23.28]
ER visits not leading to hospitalization				
Year One (N = 3,257)	6.49	[-0.95, 13.93]	-4.18	[-20.41, 12.05]
Year Two (N = 3,354)	-1.73	[-8.55, 5.09]	-6.54	[-14.96, 1.89]
Overall (N = 3,791)	2.34	[-3.99, 8.66]	-5.37	[-17.00, 6.25]
Total for services with a principal diagnosis of a behavioral health condition				
Year One (N = 3,257)	8.22	[-2.16, 18.59]	-8.89	[-26.85, 9.06]
Year Two (N = 3,354)	11.40*	[1.52, 21.27]	-2.45	[-18.78, 13.87]
Overall (N = 3,791)	9.82*	[1.32, 18.33]	-5.64	[-20.36, 9.07]
Total for services with a secondary diagnosis of a behavioral health condition				
Year One (N = 3,257)	4.57	[-33.32, 42.46]	-9.43	[-66.78, 47.93]
Year Two (N = 3,354)	-34.80	[-72.22, 2.63]	-39.46	[-87.38, 8.45]
Overall (N = 3,791)	-15.30	[-41.47, 10.87]	-24.59	[-70.11, 20.94]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower* growth in expenditures relative to the CG. A *positive* value corresponds to *faster* growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

Estimates in **Table 3-16** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower* growth in expenditures, while a *positive* value corresponds to *faster* growth. Estimates in **Table 3-17** are

interpreted as the difference in the rate of utilization associated with the MAPCP Demonstration. A *negative* value corresponds to a *decrease* in the rate of utilization, while a *positive* value corresponds to an *increase* in the rate of utilization.

**Table 3-17**  
**New York: Comparison of average change estimates for behavioral and non-behavioral health care utilization among beneficiaries with behavioral health conditions: First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause inpatient admissions				
Year One (N = 3,257)	-7.18	[-16.08, 1.72]	-9.04	[-25.83, 7.74]
Year Two (N = 3,354)	-15.10*	[-26.87, -3.34]	-6.02	[-17.88, 5.83]
Overall (N = 3,791)	-11.18*	[-19.90, -2.45]	-7.52	[-20.79, 5.76]
ER visits not leading to hospitalization				
Year One (N = 3,257)	-15.88	[-48.47, 16.71]	-20.95	[-72.36, 30.45]
Year Two (N = 3,354)	-18.61	[-46.86, 9.64]	-16.28	[-46.20, 13.65]
Overall (N = 3,791)	-17.26	[-44.88, 10.37]	-18.59	[-55.37, 18.18]
Behavioral health inpatient admissions				
Year One (N = 3,257)	0.02	[-1.15, 1.19]	0.17	[-0.85, 1.19]
Year Two (N = 3,354)	1.61*	[0.13, 3.08]	1.51*	[0.10, 2.92]
Overall (N = 3,791)	0.82	[-0.06, 1.70]	0.85*	[0.05, 1.64]
Behavioral health ER visits				
Year One (N = 3,257)	-6.36	[-13.32, 0.60]	0.50	[-6.16, 7.16]
Year Two (N = 3,354)	-2.26	[-7.44, 2.92]	5.70*	[1.78, 9.62]
Overall (N = 3,791)	-4.29	[-9.02, 0.44]	3.12	[-1.33, 7.58]
Behavioral health outpatient visits <sup>1</sup>				
Year One (N = 3,168)	39.41	[-10.35, 89.17]	10.31	[-40.45, 61.07]
Year Two (N = 3,250)	-33.78	[-76.07, 8.52]	-55.38*	[-102.59, -8.16]
Overall (N = 3,713)	2.57	[-36.39, 41.52]	-22.76	[-60.92, 15.41]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- A negative estimate in Year Two suggests a potential trend in slower **total Medicare expenditures** among beneficiaries with behavioral health conditions in ADK Demonstration practices relative to beneficiaries with behavioral health conditions in PCMH practices, though the *overall* estimate is not statistically significant.
- The *overall* growth in **acute-care expenditures** is slower among beneficiaries with behavioral health conditions in ADK Demonstration practices relative to beneficiaries with behavioral health conditions in PCMH practices.
- The *overall* growth in **total expenditures for services with a principal diagnosis of a behavioral health condition** is faster among beneficiaries with behavioral health conditions in ADK Demonstration practices relative to beneficiaries with behavioral health conditions in PCMH practices. Relative to beneficiaries with behavioral health conditions in PCMH practices, the overall estimate indicates that the ADK Demonstration was associated with a decrease in the rate of **all-cause inpatient admissions** among beneficiaries with behavioral health conditions.
- Relative to beneficiaries with behavioral health conditions in PCMH practices, a positive estimate in Year Two suggests a potential trend towards an increased rate of **behavioral health inpatient admissions** among beneficiaries with behavioral health conditions in ADK Demonstration practices, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries with behavioral health conditions in non-PCMH practices, the overall estimate indicates that the ADK Demonstration was associated with an increase in the rate of **behavioral health inpatient admissions** among beneficiaries with behavioral health conditions.
- Relative to beneficiaries with behavioral health conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards an increased rate of **behavioral health ER visits** among beneficiaries with behavioral health conditions in ADK Demonstration practices, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries with behavioral health conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards a decreased rate of **behavioral health outpatient visits** among beneficiaries with behavioral health conditions in ADK Demonstration practices, though the *overall* estimate is not statistically significant.

As reported in **Table 3-10**, the overall growth in total Medicare expenditures is \$36.69 slower for disabled Medicare beneficiaries attributed to ADK practices relative to disabled Medicare beneficiaries attributed to PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this population, to provide additional information about what may be driving the reductions in Medicare expenditures.

## Beneficiaries Whose Initial Medicare Eligibility Was Due to Disability

About 32 percent of ADK Medicare beneficiaries were originally eligible for Medicare due to disability. Since disabled beneficiaries attributed to ADK Demonstration practices experienced significantly slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes in order to gain a better understanding of the slower expenditure growth. These results are presented in *Table 3-18*.

**Table 3-18**  
**New York: Comparison of average change estimates for selected expenditure and utilization measures among disabled Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs	
	Average estimate	90% confidence interval
Total Medicare expenditures		
Year One (N = 6,858)	-34.25	[-93.29, 24.78]
Year Two (N = 7,241)	-39.02	[-83.85, 5.80]
Overall (N = 7,939)	-36.69*	[-72.62, -0.75]
Acute-care expenditures		
Year One (N = 6,858)	-21.44	[-59.71, 16.83]
Year Two (N = 7,241)	-32.96	[-66.86, 0.93]
Overall (N = 7,939)	-27.31*	[-53.80, -0.83]
ER visits not leading to hospitalization expenditures		
Year One (N = 6,858)	5.35*	[0.67, 10.03]
Year Two (N = 7,241)	1.57	[-2.87, 6.00]
Overall (N = 7,939)	3.42	[-0.55, 7.39]
Specialty physician expenditures		
Year One (N = 6,858)	-4.00	[-12.98, 4.98]
Year Two (N = 7,241)	-9.90*	[-15.14, -4.66]
Overall (N = 7,939)	-7.01*	[-12.70, -1.31]
Primary care physician expenditures		
Year One (N = 6,858)	-5.40	[-11.54, 0.74]
Year Two (N = 7,241)	-4.07*	[-7.63, -0.50]
Overall (N = 7,939)	-4.72*	[-8.97, -0.47]
All-cause admissions		
Year One (N = 6,858)	-8.12*	[-15.72, -0.52]
Year Two (N = 7,241)	-9.68*	[-18.38, -0.99]
Overall (N = 7,939)	-8.92*	[-15.36, -2.47]
ER visits not leading to a hospitalization		
Year One (N = 6,858)	-1.78	[-22.85, 19.30]
Year Two (N = 7,241)	-12.90	[-26.92, 1.12]
Overall (N = 7,939)	-7.45	[-21.56, 6.66]

(continued)

**Table 3-18 (continued)**  
**New York: Comparison of average change estimates for selected expenditure and utilization measures among disabled Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs	
	Average estimate	90% confidence interval
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N=1,200)	7.65	[-25.52, 40.81]
Year Two (N=1,225)	22.97	[-11.32, 57.25]
Overall (N=2,006)	15.30	[-11.20, 41.80]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall. A *negative* value corresponds to *slower* growth in expenditures relative to the CG. A *positive* value corresponds to *faster* growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The overall growth in **total Medicare expenditures** is \$36.69 slower among disabled beneficiaries in ADK Demonstration practices relative to disabled beneficiaries in PCMH practices.
- Reductions appear to be driven by acute-care admissions and expenditures. The *overall* growth in **acute-care expenditures** is \$27.31 slower among disabled beneficiaries in ADK Demonstration practices relative to disabled beneficiaries in PCMH practices.
- The *overall* growth in **specialty care physician expenditures** is \$7.01 slower among disabled beneficiaries in ADK Demonstration practices relative to disabled beneficiaries in PCMH practices.
- The *overall* growth in **primary care physician expenditures** is \$4.72 slower among disabled beneficiaries ADK Demonstration practices relative to disabled beneficiaries in PCMH practices.

- The *overall* estimate indicates that the ADK Demonstration is associated with a decrease in the rate of **all-cause admissions** among disabled MAPCP Demonstration beneficiaries by 8.92 per 1,000 beneficiary quarters.

As reported in **Table 3-10**, the overall growth in total Medicare expenditures is \$46.72 slower for Medicare beneficiaries attributed to ADK practices in Pod 2 (Lake George) relative to Medicare beneficiaries attributed to all PCMH comparison practices. The overall growth in total Medicare expenditures is \$37.86 slower for Medicare beneficiaries attributed to ADK practices in Pod 2 relative to Medicare beneficiaries attributed to all non-PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this population, to provide additional information about what may be driving the reductions in Medicare expenditures.

### Beneficiaries Who Were Attributed to ADK Practices in Pod 2

Sixteen practices in Pod 2 (Lake George) participate in the ADK Demonstration. Since beneficiaries attributed to ADK Demonstration practices in Pod 2 had significantly slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 3-19**.

**Table 3-19**  
**New York: Comparison of average change estimates for selected expenditure and utilization measures among Medicare beneficiaries attributed to practices in Pod 2 (Lake George) and PCMH comparison groups: First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare expenditures				
Year One (N = 8,277)	-43.87*	[-76.67, -11.07]	-13.93	[-43.08, 15.23]
Year Two (N = 8,914)	-49.44*	[-86.55, -12.33]	-60.70*	[-101.14, -20.25]
Overall (N = 9,729)	-46.72*	[-71.30, -22.14]	-37.86*	[-60.32, -15.40]
Acute-care expenditures				
Year One (N=8,277)	-29.44*	[-45.74, -13.14]	-0.44	[-16.14, 15.26]
Year Two (N=8,914)	-55.28*	[-77.11, -33.44]	-48.16*	[-73.37, -22.95]
Overall (N=9,729)	-42.66*	[-53.77, -31.55]	-24.86*	[-36.83, -12.89]
ER visits not leading to hospitalization expenditures				
Year One (N=8,277)	-0.40	[-2.75, 1.95]	-3.48	[-7.78, 0.82]
Year Two (N=8,914)	-1.45	[-5.42, 2.52]	-2.40	[-6.48, 1.67]
Overall (N=9,729)	-0.94	[-3.90, 2.02]	-2.93	[-6.78, 0.93]
Specialty physician expenditures				
Year One (N = 8,277)	-10.97*	[-16.59, -5.35]	-5.14	[-11.03, 0.75]
Year Two (N=8,914)	-10.46*	[-17.02, -3.90]	-10.62*	[-14.95, -6.30]
Overall (N=9,729)	-10.71*	[-16.43, -4.99]	-7.94*	[-12.16, -3.73]

(continued)

**Table 3-19 (continued)**  
**New York: Comparison of average change estimates for selected expenditure and utilization measures among Medicare beneficiaries attributed to practices in Pod 2 (Lake George) and PCMH comparison groups:**  
**First 2 years of MAPCP Demonstration**

Outcome	ADK PCMHs vs. CG PCMHs		ADK PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care physician expenditures				
Year One (N = 8,277)	-7.12*	[-10.94, -3.30]	-4.12*	[-6.78, -1.46]
Year Two (N=8,914)	-9.75*	[-12.81, -6.69]	-7.00*	[-9.69, -4.31]
Overall (N=9,729)	-8.47*	[-11.73, -5.20]	-5.59*	[-8.00, -3.18]
All-cause admissions				
Year One (N = 8,277)	-2.56	[-7.34, 2.22]	1.25	[-3.83, 6.34]
Year Two (N=8,914)	-3.86	[-10.25, 2.52]	0.49	[-5.28, 6.26]
Overall (N=9,729)	-3.23	[-7.97, 1.52]	0.86	[-3.82, 5.54]
ER visits not leading to a hospitalization				
Year One (N = 8,277)	-0.84	[-9.43, 7.75]	-9.37	[-24.15, 5.41]
Year Two (N=8,914)	-5.14	[-15.82, 5.55]	-6.62	[-19.19, 5.95]
Overall (N=9,729)	-3.04	[-11.22, 5.15]	-7.96	[-20.52, 4.59]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N=1,358)	-16.72	[-50.24, 16.81]	-4.09	[-35.34, 27.17]
Year Two (N=1,409)	-13.83	[-43.38, 15.72]	7.58	[-25.14, 40.29]
Overall (N=2,336)	-15.27	[-43.69, 13.16]	1.77	[-23.83, 27.37]

**NOTES:**

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall. A *negative* value corresponds to *slower* growth in expenditures relative to the CG. A *positive* value corresponds to *faster* growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique ADK Demonstration participants eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

ADK = Adirondack Medical Home Demonstration; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The overall growth in **total Medicare expenditures** is \$46.72 slower among Pod 2 beneficiaries in ADK Demonstration practices relative to Pod 2 beneficiaries in PCMH practices.
- The overall growth in **total Medicare expenditures** is \$37.86 slower among Pod 2 beneficiaries in ADK Demonstration practices relative to Pod 2 beneficiaries in non-PCMH practices.
- Reductions appear to be driven by acute-care expenditures. The *overall* growth in **acute-care expenditures** is \$42.66 slower among Pod 2 (Lake George) beneficiaries in ADK Demonstration practices relative to Pod 2 beneficiaries in PCMH practices and \$24.86 slower relative to Pod 2 beneficiaries in non-PCMH practices.
- The *overall* growth in **specialty care physician expenditures** is \$10.71 slower among Pod 2 (Lake George) beneficiaries in ADK Demonstration practices relative to Pod 2 beneficiaries in PCMH practices and \$7.94 slower relative to Pod 2 beneficiaries in non-PCMH practices.
- The *overall* growth in **primary care physician expenditures** is \$8.47 slower among Pod 2 (Lake George) beneficiaries in ADK Demonstration practices relative to Pod 2 beneficiaries in PCMH practices and \$5.59 slower relative to Pod 2 beneficiaries in non-PCMH practices.

### 3.7.3 Discussion of Special Populations

While New York did not state explicitly that they would focus on specific special populations, all three Pods have targeted certain initiatives to 1) patients with chronic illnesses (e.g., diabetes, COPD, CHF, and asthma), 2) patients at risk for complications from particular chronic conditions, and 3) patients at high risk for medical events because of significant medical and/or psychosocial need. The initiative most frequently cited by Pod administrators and practices was to extend case management by care managers to these patients. The general expectation is that helping these patients better manage their conditions and obtain evidence-based care could lead to more appropriate use of health services and better health outcomes, which could, in turn, result in lower rates of total expenditure growth for these patients.

The quantitative results on the association of the ADK Demonstration with total Medicare PBPM expenditures suggests that this expectation is being met. Unlike the general ADK Demonstration Medicare population, there were no statistically significant findings in average growth in total expenditures of beneficiaries with multiple chronic conditions. When we examined expenditures and utilization for this subgroup of beneficiaries in more detail, we found that overall average growth in expenditures for primary care and specialty physicians, as well as imaging and non-facility expenditures, were slower among those assigned to ADK Demonstration practices relative to those assigned to comparison PCMH or non-PCMH practices (*Table 3-14*).

The magnitude of the slower growth rates was larger for beneficiaries with multiple chronic conditions than for the general Medicare ADK Demonstration population. For example,

the growth in specialty care is \$12.62 and \$11.08 for beneficiaries with multiple chronic conditions relative to the PCMH and non-PCMH comparison groups, respectively. For the overall ADK Demonstration Medicare population, the growth rates were \$6.79 and \$4.23 less (*Table 3-7*). We also found a significant decrease in the rate of all-cause inpatient admissions relative to PCMH practices and a trend toward a decrease relative to non-PCMH practices (*Table 3-15*). These decreases were greater (25.98 versus 8.81 visits per 1,000 beneficiary quarters) than those of all ADK Demonstration Medicare beneficiaries (*Table 3-8* and *Table 3-15*).

Because of the considerable amount of time spent by practices to improve the care received by beneficiaries with multiple chronic conditions, we also examined several key quality of care metrics. We found reductions in the rate of preventable hospitalizations only relative to beneficiaries with multiple chronic conditions assigned to PCMH practices (*Table 3-12*). Among those with diabetes specifically, we observed a significant increase in the likelihood of receiving medical attention for nephropathy relative to comparison non-PCMHs beneficiaries and an increase in the likelihood of receiving a retinal eye examination relative to comparison PCMHs (*Table 3-11*). We also examined access to care and continuity of care for this population and found no significant improvements in the average change in unplanned readmissions and hospital discharge follow-ups for these beneficiaries (*Table 3-13*). Unfortunately, there was a decrease in the continuity of care for these patients relative to both comparison groups.

While no significant differences were observed in the total Medicare expenditures of dually eligible beneficiaries, we did observe a significant decrease in the growth rate among disabled beneficiaries, but this decrease was only observed relative to PCMH comparison practices (*Table 3-10*). Notably, the overall average growth in total expenditures was slower for Medicare beneficiaries in Pod 2 relative to both PCMH and non-PCMH comparison groups (*Table 3-10*). The slower growth in expenditures was driven by expenditures for acute-care, specialty physicians, and primary care physicians (*Table 3-19*). We noted during the site visit that Pod 2 was larger, better funded, and more centrally organized in their care management services than Pod 1 and 3, due in large part to the fact that Pod 2 is comprised of a single network of FQHCs. The coordinated efforts of Pod 2 to implement practice transformations and care management initiatives throughout each of their FQHCs may explain, in part, the relatively better performance for beneficiaries in Pod 2 compared to the other Pods. RTI will consider additional analyses to break out expenditures, utilization rates, and other possible outcomes, by Pod region, for the final report.

Addressing the needs of patients with behavioral health conditions proved difficult. With a greater focus on connecting these patients to needed behavioral health services, there was an expectation that rates of outpatient behavioral health visits might increase for ADK Demonstration participants. Several providers interviewed during the Year Two site visit spoke at length of significant unmet need for behavioral health treatment in the Adirondack region, and several providers also spoke of the disproportionately high numbers of patients within their panels with behavioral health conditions. Many providers, particularly in Pods 1 and 3, were struggling just to address depression within the primary care setting. They acknowledged that most of the complicated behavioral health conditions were not being addressed because of staffing shortages (e.g., mental health providers) and a lack of resources these patients. Although Pod 2 was able to hire a social worker to help the highest need patients access needed social, mental health, and substance abuse services, interviewees consistently noted that mental health

treatment was simply not available in the area. Consistent with the qualitative findings that providers were attempting to address unmet behavioral health needs and link beneficiaries to services, we found some evidence in the quantitative analysis of greater growth in total expenditures for which a behavioral health condition was a primary diagnosis among beneficiaries assigned to the ADK Demonstration. For example, the *overall* growth in **total expenditures for services with a principal diagnosis of a behavioral health condition** is faster among beneficiaries with behavioral health conditions in ADK Demonstration practices relative to beneficiaries with behavioral health conditions in PCMH practices (*Tables 3-16 and 3-17*). In contrast, there was a significant overall decrease in acute-care expenditures among beneficiaries with behavioral health conditions for ADK Demonstration practices relative to PCMH practices. However, these results are encouraging, and we will monitor them for changes in Year Three of the MAPCP Demonstration.

### **3.8 Discussion of New York’s Year Two Findings and Next Steps**

State leaders view the ADK Demonstration, and the medical home model as a whole, as an integral part of New York’s overall strategy to transform the delivery of health care to be of higher quality and more efficient. Through June 2013, 42 practices throughout the Adirondack region continued to participate in the ADK Demonstration. Conveners of the state’s initiative did not make any significant changes in the structure or operation of the ADK Demonstration in Year Two. They made refinements to their care management processes, hired new physicians and mid-level providers (e.g., physician assistants), and upgraded their health IT capabilities to meet NCQA PCMH 2011 standards. Overall, our Year Two interviews with state conveners, providers, and other key stakeholders suggested that the ADK Demonstration has been a success in meeting its key goals to stabilize the availability of primary care providers in the region, and improve access, quality and continuity of care for patients.

The quantitative analyses of the Medicare claims data for Year Two somewhat supports, although not uniformly, more anecdotal successes noted during the site visit. Most of the quantitative results for quality of care, access to care, and care coordination were not statistically significant when comparing ADK Demonstration practices to the comparison group. However, there were a few notable outcomes that were statistically significant and trended in the positive direction to improve quality of care and care coordination. For example, there was a greater likelihood that ADK Demonstration Medicare beneficiaries with diabetes received Retinal Eye Examinations compared to all beneficiaries in the comparison group (*Table 3-4*), which was consistent with providers’ observation that there has been a strong emphasis on quality of care and preventive care. Moreover, this finding is consistent with the demonstration’s goal to ensure that all diabetic patients receive annual eye and foot exams. There was some indication of decreased rates of PQI admissions, though these results were not statistically significant.

In the Year Two interviews, stakeholders said that a key goal of the ADK Demonstration is to, over time, lower the growth in expenditures and health care utilization. Many acknowledged, however, that the “verdict is still out” on whether the demonstration will reduce the growth of utilization and cost. However, many providers shared anecdotal evidence of less reliance on the ER and fewer inpatient admissions and readmissions among their patients. Many of these stakeholders, providers in particular, were becoming more optimistic that the ADK Demonstration was showing some trends in the right direction. Many providers and care

managers shared anecdotal evidence that improved care management over the past year is helping to reduce ER visits, inpatient hospitalizations, and hospital readmissions. Indeed, the Medicare population participating in the ADK Demonstration has seen slower overall average growth in total Medicare expenditures compared to beneficiaries assigned to the comparison group (**Table 3-7**). This slower growth translates into total gross savings to Medicare of \$12.6 million and Medicare RoI of 3.88%.

The Pod structure is a key feature of the ADK Demonstration that some consider unique. State officials, providers and other stakeholders agree has served as an invaluable vehicle to provide more regional-based care coordination services, particularly for smaller practices that have struggled to maintain care coordination services on their own. From the perspective of all New York stakeholders, providers in particular, primary care transformation can have a “different look” across the three Pods. And over the past 2 years, we have learned how the Pod structures vary considerably. Pod 2 is composed mostly of FQHCs that are owned and operated by an integrated primary care delivery system known as Hudson Headwaters Health Network. Pod 1 is comprised of mostly small, private practices, and Pod 3 was made up mostly of practices affiliated with a large hospital system. The integrated nature of Pod 2 was often perceived by stakeholders as an advantage in rapid transformation to the medical home, and indeed Pod 2 is the only region that showed an overall trend of reducing the growth of total Medicare expenditures compared to all beneficiaries in the comparison group (**Table 3-10**). Findings for total Medical expenditures for Pods 1 and 3 were not statistically significant. RTI will continue to monitor these trends over time by Pod to see whether the associations with the demonstration differ by Pod as was expected by state conveners.

Each of the three Pods have focused on certain subgroups, including beneficiaries with multiple chronic conditions, within their respective regions during the first 2 years of the MAPCP Demonstration. The general expectation is that targeting these populations with better care coordination and care management of their chronic conditions would result in lower rates of total expenditure growth for those beneficiaries. The quantitative results of expenditure outcomes for Medicare beneficiaries with multiple chronic conditions lend some support to the notion. Our analysis of this subgroup of beneficiaries showed that the overall average growth in acute expenditures was slower compared to beneficiaries in the PCMH comparison along with a decrease in all-cause admissions relative to both comparison groups (**Tables 3-14 and 3-15**).

It remains to be seen what impact, if any, new initiatives undertaken by the state (particularly the ACO Shared Savings program, the SIM initiative, and their Delivery System Reform Incentive Payment Waiver program) will have on the ADK Demonstration. The implementation experience and impact of putting \$0.50 PMPM at risk is also of particular interest, and will be being closely tracked in Year Three of the demonstration. Stakeholders believe they are witnessing improvements in access to care and quality of care, though they acknowledge that progress in bending utilization and costs trends may take longer than the demonstration period. Among Medicare beneficiaries, we saw some evidence of improved quality in specific areas (i.e., diabetes) and lower total cost growth. The integrated nature of Pod 2 may hold particular promise in facilitating change, and some positive results for expenditure growth, quality of care, and reductions in utilization for those with multiple chronic conditions lend some support for the differential impact of this initiative on those most in need of support from the medical home.

## CHAPTER 4

### RHODE ISLAND

In this chapter, we present qualitative and quantitative findings related to the implementation of the Chronic Care Sustainability Initiative (CSI), Rhode Island's preexisting multi-payer initiative, which added Medicare as a payer to implement the MAPCP Demonstration. We report qualitative findings from the second of three annual site visits to Rhode Island, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the demonstration's association with the five outcome domains described in *Section 1.1.2*. We also report characteristics of practices participating in the state initiative.

For the second site visit, conducted from October 30 through November 1, 2013, four teams traveled across the state. The focus of the site visit was on changes and implementation experiences occurring since the last site visit in October 2012. During the site visit, we interviewed providers, nurses, and administrators from participating patient-centered medical homes (PCMHs) and provider organizations, to learn about the perceived effects of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's participation. We met with key state officials, staff from the contractor administering CSI, and staff from the Rhode Island Quality Institute (RIQI) involved with implementation of CSI and the MAPCP Demonstration to learn about progress with implementation of the new payment model and the transition of practice transformation and data analytic services after the end of the Beacon Community grant. We also met with payers to learn about their experiences with implementation and whether or not the new payment model was meeting their expectations for return on investment. In addition, we reviewed reports from CSI to CMS and other documents.

This chapter is organized by major evaluation domains. *Section 4.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in CSI. *Section 4.2* reports practice transformation activities. Subsequent sections report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 4.3*); access to care and coordination of care (*Section 4.4*); beneficiary experience with care (*Section 4.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 4.6*); and special populations (*Section 4.7*). A discussion of the findings (*Section 4.8*) concludes the chapter.

#### 4.1 State Implementation

In this section, we present findings related to the implementation of CSI and changes made by the state, practices, and payers in the second year of its MAPCP Demonstration. We provide information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?

- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors affected implementation?

**Section 4.1.1**, the state profile, describes the current status of major features of the state initiative and the context in which it operates. This section draws on a variety of sources, including quarterly reports submitted to CMS by CSI project staff; monthly calls with CSI project staff, CMS staff, and evaluation team members; news articles; state and federal Web sites; and the site visit conducted in October and November 2013. **Section 4.1.2** presents a logic model reflecting our understanding of the link between specific elements of CSI and expected changes in outcomes. **Section 4.1.3** presents key findings gathered from the site visit about the implementation experience of state officials, payers, and providers during the second year of the demonstration. In **Section 4.1.4**, we conclude the State Implementation section with lessons learned during the first 2 years of the MAPCP Demonstration.

#### **4.1.1 Rhode Island State Profile as of October 2013 Evaluation Site Visit**

The overarching mission of CSI was improving health outcomes—especially for those with chronic illnesses—by transforming primary care. The project began with a grant from the Center for Health Care Strategies in 2006 that enabled the Rhode Island Office of the Health Insurance Commissioner (OHIC) to convene stakeholders to conceptualize the project. Stakeholders agreed that a multi-payer PCMH model was ideally suited for advancing common goals for quality, access, and cost. CSI was launched in 2008 under the name CSI, backed by nearly universal commercial and Medicaid managed care plan participation. Payers offered enhanced payment and other support in exchange for practices meeting National Committee for Quality Assurance (NCQA) Physician Practice Connections (PPC<sup>®</sup>) PCMH<sup>™</sup> standards, quality improvement goals, and cost reduction goals. Rhode Island’s participation in the MAPCP Demonstration, and corresponding Medicare payments to CSI practices, began in July 2011; in Year Two, participating practices had PCMH payment support for nearly all insured patients.

**State environment.** OHIC first convened CSI in June 2006. OHIC brought leadership to the initiative, offered antitrust protection for payers to collaborate, and promoted a sense of common purpose among diverse stakeholders. Stakeholders, including primary care providers, payers, purchasers, state agencies, and independent experts, helped OHIC plan, design, and implement CSI. In 2009, OHIC used its leverage to establish four Affordability Standards for commercial health insurers. The standards went into effect in 2010, 2 years after the launch of CSI; in 2013, OHIC extended the Affordability Standards through 2018.

The first Affordability Standard, known as the primary care spend standard, directed carriers to increase the proportion of their total health care expenditures on primary care by one percentage point per calendar year until a new benchmark study for primary care was completed and the target reset. The standard emphasized innovative payment models and infrastructure investment, rather than FFS primary care rate increases; CSI was one mechanism by which insurers increased spending on primary care in fulfilling this requirement. The second standard, known as the PCMH standard, required insurers to participate in CSI. The third and fourth standards required insurers to contribute financial support to CurrentCare, Rhode Island’s health information exchange (HIE), and to participate in state payment reform efforts.

Elected officials were broadly supportive of CSI. In 2011, Rhode Island enacted the Rhode Island All-Payer Patient Centered Medical Home Act to codify much of CSI's work. The legislation also required the future participation of state-regulated health insurers. In addition, the Medical Home Act elevated the Rhode Island Executive Office of Health and Human Services to the position of co-convenor of CSI.

Several relevant programs operating in the state may have influenced outcomes for participants in CSI and the comparison group population:

- Medicaid FFS operated a primary care case management program, Connect Care Choice, for beneficiaries with chronic illnesses; nine CSI practices participated. Connect Care Choice was closely aligned with CSI criteria.
- RIQI operated Rhode Island's Regional Extension Center, which supported Rhode Island providers in adopting health information technology (health IT). RIQI also operated CurrentCare, Rhode Island's HIE. Finally, CSI contracted with RIQI to provide continued data analytics for CSI practices; this service previously was provided under RIQI's \$15.9 million Beacon Community grant, which ran from July 2010 through March 2013. The Beacon initiative was closely aligned with CSI, providing support and technical assistance to all CSI practices and convening joint committees and work groups to harmonize quality measures to enhance coordination. Beacon also provided significant data collection (including creation of an interim data warehouse until construction of an all-payer claims database was completed), analysis, and reporting support to CSI, and as well as practice transformation support to CSI and Beacon practices.
- Rhode Island obtained approval for three Section 2703 Health Homes State Plan Amendments (SPAs). The target population for the first SPA, approved in November 2011, was children with special health care needs; the target providers were the state's Comprehensive Evaluation, Diagnosis, Assessment, Referral, and Re-evaluation (CEDARR) Family Centers. The target population for the second SPA, also approved in November 2011, was persons with serious and persistent mental illnesses; the target providers were community mental health centers. Rhode Island's enhanced federal match for health home services through these two SPAs ended October 1, 2013. A third SPA, approved in November 2013, targeted patients receiving medication-assisted treatment for opioid dependence; target providers were community behavioral health agencies.
- Coastal Medical, a large group practice with four practice sites participating in CSI, was selected to participate in the Medicare Shared Savings Program in July 2012.
- In February 2013, Rhode Island was awarded a \$1.6 million State Innovation Models (SIM) Initiative Model Design grant from the Center for Medicare & Medicaid Innovation (CMMI) to develop a State Health Care Innovation Plan.<sup>1</sup> CSI leadership

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<sup>1</sup> The full text of Rhode Island's State Health Care Innovation Plan is available online: <https://www.ctc-ri.org/files/uploads/SHIP%20draft%20for%20workgroups.pdf>.

was engaged throughout the planning process, which included a significant focus on building primary care infrastructure in the state.

- Blue Cross Blue Shield of Rhode Island (BCBSRI) operated an independent PCMH program. In April 2013, BCBSRI shifted several practices to CSI contracts. In addition, BCBSRI provided grants to some practices to support implementation of electronic health records (EHRs) and offered practice transformation support to some CSI practices, replacing practice transformation support previously provided by TransforMED through the Beacon program.
- The Brown University Primary Care Transformation Initiative developed a practice transformation support team through a Title VII grant from the federal Health Resources and Services Administration (HRSA). In 2013, CSI began contracting with Memorial Hospital of Rhode Island for Brown to provide practice facilitation to CSI practices; as with BCBSRI, Brown replaced some practice transformation support activities previously provided by TransforMED.

**Demonstration scope.** In 2008, CSI began payments to five pilot practices located throughout the state, with the expectation that each practice would focus primarily on improving care for adults with chronic conditions. CSI has expanded twice, in April 2010 and October 2012, both through competitive application processes. *Table 4-1* shows participation in the Rhode Island MAPCP Demonstration at the end of the first and second years of the demonstration. Participating practices with attributed Medicare FFS beneficiaries numbered 16 at the end of Year One (June 30, 2012) and 18 at the end of Year Two (June 30, 2013)—an increase of 13 percent. The number of providers at these practices increased by 36 percent, from 73 to 99. The cumulative number of Medicare FFS beneficiaries that had ever participated in the demonstration for three or more months was 7,912 at the end of the first year and 10,658 at the end of the second year—an increase of 35 percent.

**Table 4-1**  
**Number of practices, providers, and Medicare FFS beneficiaries participating in the Rhode Island CSI**

Participating entities	Number as of June 30, 2012	Number as of June 30, 2013
CSI practices <sup>1</sup>	16	18
Participating providers <sup>1</sup>	73	99
Medicare FFS beneficiaries <sup>2</sup>	7,912	10,658

NOTES:

- CSI practices included only those practices with attributed Medicare FFS beneficiaries, and participating providers were the providers associated with those practices.
- The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries that had ever been assigned to participating CSI practices and participated in the demonstration for at least 3 months.

ARC = Actuarial Research Corporation; CSI = Chronic Care Sustainability Initiative; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCES: <sup>1</sup>ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

The number of all-payer participants enrolled in CSI was 46,212 at the end of Year One (June 30, 2012) and 53,946 at the end of Year Two (June 30, 2013), an increase of 7,734, or 17 percent. Rhode Island's application to join the MAPCP Demonstration did not provide a projection for all-payer participation.

The five payers participating in CSI as of June 2013 were Medicare FFS (16% of total participants), Neighborhood Health Plan of Rhode Island (20%), BCBSRI (40%), Tufts Health Plan (1%), and United Healthcare (23%). Neighborhood Health Plan was a Medicaid managed care plan, and the latter three payers participated on behalf of all of their business lines: BCBSRI and Tufts both had commercial and Medicare Advantage products; United has commercial, Medicare Advantage, and Medicaid managed care products. There are relatively few self-insured employers in Rhode Island; however, 100 percent of the state's administrative services-only purchasers participated in CSI, including the state employees health plan. Most Rhode Island Medicaid beneficiaries were enrolled in managed care. Though Medicaid FFS did not participate in CSI, in July 2010, Medicaid required that new contracts with managed care plans include participation in CSI; these new contracts went into effect in September 2010.

**Table 4-2** displays the characteristics of the practices with attributed Medicare FFS beneficiaries participating in CSI as of June 30, 2013. There were 18 participating practices with an average of six providers per practice. All practices were either office-based (72%) or federally qualified health centers (28%); no critical access hospitals (CAHs) or rural health clinics (RHCs) participated. All practices were located in three metropolitan counties.

**Table 4-2**  
**Characteristics of practices participating in the Rhode Island CSI as of June 30, 2013**

Characteristic	Number or percent
Number of practices (total)	18
Number of providers (total)	99
Number of providers per practice (average)	6
Practice type (%)	
Office-based practice	72
Federally qualified health center	28
Critical access hospital	0
Rural health clinic	0
Practice location type (%)	
Metropolitan	100
Micropolitan	0
Rural	0

NOTES:

ARC = Actuarial Research Corporation; CSI = Chronic Care Sustainability Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: ARC Q8 MAPCP Demonstration Provider File. (See Chapter 1 for more detail about this file.)

**Table 4-3** shows demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating CSI practices during the first 2 years of the MAPCP Demonstration (July 1, 2011 to June 30, 2013). Beneficiaries with fewer than 3 months of eligibility for the demonstration were not included in our evaluation or this analysis. Of the

beneficiaries assigned to CSI practices during the first 2 years of the MAPCP Demonstration, 32 percent were under the age of 65; 40 percent were between the ages of 65 and 75; 19 percent were between the ages of 76 and 85; and 9 percent were over age 85. The mean age was 66. Eighty-seven percent of beneficiaries were White; all lived in urban areas; and 59 percent were female. Thirty-two percent of beneficiaries were dually eligible for Medicare and Medicaid, and 39 percent were eligible for Medicare originally because of disability. One percent of beneficiaries had end-stage renal disease (ESRD) or resided in a nursing home during the year before assignment to a CSI practice.

**Table 4-3**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Rhode Island CSI from July 1, 2011, through June 30, 2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	10,658
Demographic characteristics	
Age < 65 (%)	32
Ages 65–75 (%)	40
Ages 76–85 (%)	19
Age > 85 (%)	9
Mean age	66
White (%)	87
Urban place of residence (%)	100
Female (%)	59
Dual eligibles (%)	31
Disabled (%)	38
End-stage renal disease (%)	1
Institutionalized (%)	1
Health status	
Mean HCC score groups	1.02
Low risk (< 0.48) (%)	25
Medium risk (0.48–1.25) (%)	51
High risk (> 1.25) (%)	25
Mean Charlson Index score	0.73
Low Charlson Index score (= 0) (%)	65
Medium Charlson Index score ( $\leq 1$ ) (%)	18
High Charlson Index score ( $> 1$ ) (%)	17
Chronic conditions (%)	
Heart failure	3
Coronary artery disease	11
Other respiratory disease	11
Diabetes without complications	15
Diabetes with complications	4
Essential hypertension	31
Valve disorders	2
Cardiomyopathy	1
Acute and chronic renal disease	4
Renal failure	3

(continued)

**Table 4-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Rhode Island CSI from July 1, 2011, through June 30, 2013**

Demographic and health status characteristics	Percentage or mean
Chronic conditions (%) (continued)	
Peripheral vascular disease	1
Lipid metabolism disorders	17
Cardiac dysrhythmias and conduction disorders	8
Dementias	1
Strokes	1
Chest pain	4
Urinary tract infection	4
Anemia	5
Malaise and fatigue (including chronic fatigue syndrome)	2
Dizziness, syncope, and convulsions	6
Disorders of joint	6
Hypothyroidism	4

**NOTES:**

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to a patient-centered medical home after the start of the demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid.

CSI = Chronic Care Sustainability Initiative; HCC = Hierarchical Condition Category; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: Medicare claims files.

Using three different measures—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions—we describe beneficiaries' health status during the year before assignment to a CSI practice. Beneficiaries had a mean HCC score of 1.02, meaning that Medicare beneficiaries assigned to a CSI practice in the second year of the demonstration were predicted to be 2 percent more costly than an average Medicare FFS beneficiary in the year before assignment to a participating CSI practice. Beneficiaries' average score on the Charlson Comorbidity Index was 0.73; just under two-thirds (65%) of beneficiaries had a low (zero) score, indicating that they did not receive medical care for any of the 18 clinical conditions in the index in the year before their assignment to a participating CSI practice.

The most common chronic conditions diagnosed were hypertension (34%), lipid metabolism disorders (17%), diabetes without complications (15%), other respiratory disease (11%), and coronary artery disease (11%). Fewer than 10 percent of beneficiaries were treated for any of the other chronic conditions.

**Practice expectations.** Practice expectations evolved over the course of CSI. Initial contracts required that CSI practices meet NCQA PPC<sup>®</sup> PCMH<sup>™</sup> Level 1 recognition standards within 6 months of executing their initial contract, and Level 3 recognition by the end of the

initial 2-year contract period, as well as satisfy additional program criteria. Practices also were required to provide nurse care manager services, participate in one year of practice transformation training, and use an electronic registry. After expiration of their initial 2-year contract, CSI practices were subject to the conditions of a renewal contract that included requirements to reduce acute-care utilization and demonstrate performance on key quality metrics. Additional renewal contract requirements included

- Regular generation of quality reports;
- Measurement of patient satisfaction;
- Achievement of specified utilization changes;
- Expanded access to care outside of normal business hours;
- Adoption of best practices for care transitions between hospital and outpatient settings; and
- Establishment of compacts with at least four specialists, including at least one hospitalist.<sup>2</sup>

The first two cohorts of CSI practices (five pilot practices and eight expansion practices) transitioned to the renewal contract when their original contracts expired in April 2011 and April 2012, respectively.

In April 2013, CSI initiated a new common contract for all participating practices. The new contract, known as the Developmental Contract, was designed to support practices at various stages of PCMH transformation. It defines 4 contract years (Start-Up Year, Transition Year, Performance Year One, and Performance Year Two) with stage-appropriate practice requirements, performance targets, and payments.

Under the Developmental Contract, all CSI practices are required to

- Employ an EHR that meets Stage 1 Meaningful Use standards;
- Hire and train a nurse care manager;
- Participate in CSI training and reporting activities, including learning collaboratives; and
- Advance to a new transformation level and associated contract year annually. If practices failed to advance, the CSI Executive Committee reviewed the case and decided whether the practice would continue to participate in the initiative.

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<sup>2</sup> Compacts were to be modeled on the Colorado Primary Care-Specialty Care Compact (2012) and similar recommendations from the American College of Physicians Council of Subspecialty Societies (CSS) PCMH Workgroup (American College of Physicians, 2013).

Additional expectations for practices in each contract year are described below.

#### Start-Up Year practices

- Achieve and maintain Level 1 NCQA PPC® PCMH™ recognition by the end of the first contract year.
- Submit an after-hours protocol detailing how and where patients can access care outside of the emergency room (ER) on evenings, weekends, and holidays, and implement the approved protocol within 6 months of the contract start date.
- Comply with Quality Partners of Rhode Island (now Healthcentric Advisors) best practices for care transitions between hospital and outpatient settings by the end of the start-up year.

#### Transition Year practices

- Maintain compliance with the basic Developmental Contract and start-up year requirements described above.
- Achieve and maintain Level 2 NCQA PPC® PCMH™ recognition.
- Establish compacts with at least four specialists, including at least one hospitalist, within 9 months of the Transition Year start date.

#### Performance Years One and Two practices

- Maintain compliance with the requirements for the basic Developmental Contract, start-up year, and transition year, described above.
- Achieve and maintain Level 3 NCQA PPC® PCMH™ recognition.

**Support to practices.** From July 1, 2011, to June 30, 2013, Medicare MAPCP Demonstration payments were \$903,629, including payments to demonstration practices; payments to South County Hospital, which employed the nurse care manager for some practices; and payments for CSI program management.

In April 2013, CSI restructured its contract under what they called the Developmental Contract. Previously, when practices first joined CSI, they were subject to an initial contract and then a renewal contract thereafter. Under the *initial* CSI contract, practices received \$3.00 per member per month (PMPM) as a base payment for PCMH services, plus \$1.16 PMPM earmarked for nurse care management. The enhanced reimbursement methodology changed with implementation of the *renewal* CSI contract in April 2011 (five pilot practices) and April 2012 (first expansion practices), which increased the base payment to \$5.50 PMPM, including nurse care manager support.

Renewal CSI contracts also incorporated performance-related adjustments to the base payment of \$5.50 PMPM. These adjustments resulted in payment increases for practices achieving more performance targets, or payment reductions for those failing to meet a minimum

standard. Depending on performance, the potential PMPM payments were either reduced by \$0.50 to \$5.00 PMPM if fewer than two of the three specified performance targets were achieved; maintained at \$5.50 PMPM if the CSI-wide utilization performance target and one other performance target both were achieved; or increased by \$0.50 to \$6.00 PMPM if all three specified performance targets were achieved. The utilization target was based on hospital admissions and ER visits; the quality target was based on seven clinical quality indicators;<sup>3</sup> and the member satisfaction target was based on results of a member satisfaction survey.

Under the Developmental Contract implemented in April 2013, practices continued to receive a base payment of \$5.50, including \$2.50 earmarked for nurse care management. Practices were eligible to receive additional PMPM performance payments based on achievement of performance targets and their developmental stage (**Table 4-4**). Because the Developmental Contract was negotiated after the MAPCP Demonstration began, Medicare payments were capped at the originally approved maximum rate of \$6.00. As a result, in some cases, actual payments for Medicare patients may have been less than the rate paid for commercial or Medicaid patients.

To enable practices to capitalize on these resources, CSI offered practice facilitation (through the Brown University Primary Care Transformation Initiative team at Memorial Hospital of Rhode Island and BCBSRI), hosted in-person trainings, and convened key practice staff for monthly videoconferences.

**Table 4-4**  
**PMPM payment rates to CSI practices under April 2013 Developmental Contract**

Developmental stage, targets	PMPM payments
<b>Start-Up Year</b> <i>Target 1:</i> Achieve NCQA PPC® PCMH™ Level 1 recognition, engage in practice transformation activities, and achieve required structural changes (hire nurse care manager, establish four compacts with specialists, and create and implement after-hours protocol). <i>Target 2:</i> Establish quality data reporting for required measures. <i>Target 3:</i> Implement interventions to reduce ER visits and inpatient admissions.	Maximum: \$5.50 Base: \$5.50
<b>Transition Year</b> <i>Target 1:</i> Achieve NCQA PPC® PCMH™ Level 2 recognition; maintain required structural changes. <i>Target 2:</i> Establish quality data baseline and begin work to achieve targets. <i>Target 3:</i> Continue interventions to reduce ER visits and inpatient admissions.	Maximum: \$6.00 Base: \$5.50  <i>Target 2:</i> +\$0.50 to measure and report
<b>Performance Year One</b> <i>Target 1:</i> Achieve NCQA PPC® PCMH™ Level 3 recognition; maintain required structural changes. <i>Target 2a:</i> Achieve 4 (of 7) quality targets. <i>Target 2b:</i> Achieve 2 (of 3) patient experience targets. <i>Target 3a:</i> Achieve inpatient admissions reduction targets. <i>Target 3b:</i> Achieve ER visit reduction targets.	Maximum: \$7.50 (capped at \$6.00 for Medicare FFS) Base: \$5.50 <i>Target 2a:</i> +\$0.50 <i>Target 2b:</i> +\$0.50 <i>Target 3a:</i> +\$0.50 <i>Target 3b:</i> +\$0.50

(continued)

<sup>3</sup> Practices originally reported six quality indicators. The number of indicators and the specific indicators reported changed in 2012 with the adoption of measures harmonized with the Beacon Community initiative.

**Table 4-4 (continued)**  
**PMPM payment rates to CSI practices under April 2013 Developmental Contract**

Developmental stage, targets	PMPM payments
Performance Year Two <i>Target 1:</i> Achieve NCQA PPC® PCMH™ Level 3 recognition; maintain required structural changes. <i>Target 2a:</i> Achieve at least 4 (of 7) quality targets, or achieve at least 6 (of 7) quality targets. <i>Target 2b:</i> Achieve 2 (of 3) patient experience targets. <i>Target 3a:</i> Achieve inpatient admissions reduction targets. <i>Target 3b:</i> Achieve ER visit reduction targets.	Maximum: \$8.75 (capped at \$6.00 for Medicare FFS) Base: \$5.50 Target 2a: If min. 4 of 7 +\$0.50, If min. 6 of 7, +\$0.75 Target 2b: +\$0.50 Target 3a: +\$1.25 Target 3b: +\$0.75

CSI = Chronic Care Sustainability Initiative; ER = emergency room; FFS = fee-for-service; NCQA = National Committee for Quality Assurance; PMPM = per member per month; PPC®-PCMH™ = Physician Practice Connection Patient-Centered Medical Home.

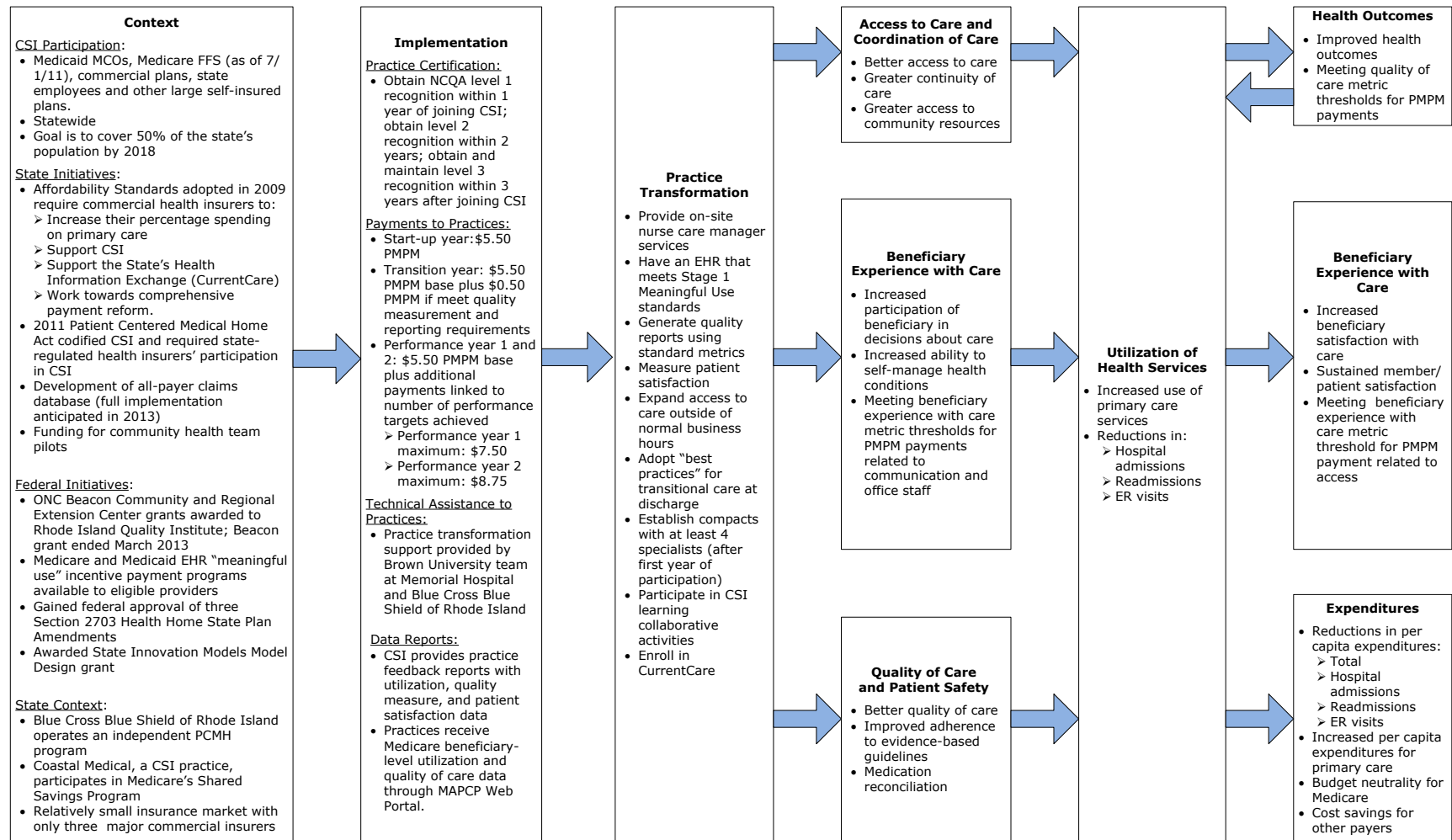
SOURCE: Rhode Island Chronic Care Sustainability Initiative Agreement, Attachment H: Per-Member-Per-Month Payment Grid, May 16, 2013.

CSI also provided participating practices with quarterly performance feedback reports for quality improvement purposes. Performance feedback reports were available to practices approximately 5 weeks after the end of the reporting quarter. In the absence of a statewide all-payer claims database, RIQI created infrastructure to collect and aggregate claims data and calculate all-payer utilization; this information was used for practice-level quality improvement and to calculate performance payments. CSI technical assistance in data submission and data analysis supported this effort. In addition, all participating practices were enrolled in CurrentCare to share timely admissions, discharge, transfer, and (in some cases) clinical information with hospitals.

#### 4.1.2 Logic Model

**Figure 4-1** is a logic model of CSI, updated to incorporate changes made during the second year of the MAPCP Demonstration. The first column describes the context for the demonstration, including the scope of CSI, other state and federal initiatives affecting the state initiative, and key features of the state context affecting the demonstration. The demonstration context influenced implementation of CSI. Implementation activities were expected to promote transformation of practices to PCMHs, reflected in care processes and other activities. Beneficiaries served by these transformed practices were expected to have better access to more coordinated, safer, and higher quality care, as well as to have a better patient experience with care and greater engagement in decisions about the treatment and management of their conditions. These improvements were expected to promote more efficient utilization of health care services. These changes in utilization were expected to produce further changes, including improved health outcomes, improvements in beneficiary experience with care, and reductions in total per capita expenditures—resulting in savings or budget neutrality for the Medicare program and cost savings for other payers involved in the initiative. Improved health outcomes, in turn, were expected to reduce utilization further.

**Figure 4-1**  
**Logic model for Rhode Island Chronic Care Sustainability Initiative**



MCOs: managed care organizations; FFS: fee for service; CSI: Chronic Care Sustainability Initiative; ONC: Office of the National Coordinator for Health Information Technology; PMPM: per member per month; EHR: electronic health record; PCMH: patient centered medical home; NCQA: National Committee for Quality Assurance; PMPM: per member per month; ER: emergency room

### 4.1.3 Implementation

To address the evaluation questions described in *Section 4.1*, this section uses primary data gathered from the site visit to Rhode Island in October and November 2013, and other sources, and presents key findings from the implementation experience of state officials, payers, and providers.

#### Major Changes During the Second Year

**New support to practices.** CSI began to engage more fully with other providers within the “medical neighborhood,” including hospitals, specialists, behavioral health providers, and social workers. In 2013, funding for two community health teams (CHTs) was approved. Plans for a pilot team based at South County Hospital included continued provision of nurse care management and other support to area practices and an expanded focus on behavioral health and other CHT functions. A Pawtucket-based team also was in development, to be operated in collaboration with Rhode Island Medicaid, which was developing a CHT to support care for dually eligible beneficiaries.

The end of the Beacon program in March 2013 concluded a long collaboration between CSI and the Beacon program, altered the relationship between CSI and RIQI, and changed the provider of technical assistance and support to practices. CSI worked to incorporate many functions previously funded by the Beacon grant into a new operations budget, supported largely by increased contributions from insurers. The Brown University Primary Care Transformation Initiative at Memorial Hospital and a team at BCBSRI began providing practice transformation support, formerly provided by TransforMED with support from Beacon funds. This move was designed to provide practices with home-grown transformation services, rather than contracting out of state. Practices received in-person assessment and practice coaching, with less group learning than under the TransforMED model. RIQI continued to provide data analytics support on patient experience, utilization, and clinical quality measurement.

**New practice criteria.** A new common contract, known as the Developmental Contract (described in *Section 4.1.1*), was implemented in April 2013. This new contract brought all participating practices together under a single contract and offered a way for new practices to join the initiative at various levels of PCMH transformation. It also set practice expectations, performance targets, and PCMH payments for each contract year and level of transformation. Stakeholders reported that implementation was largely smooth, with practices engaging in more deliberate and specific quality improvement efforts. At the time of the site visit, program leaders and a CSI workgroup were discussing participation of longstanding CSI practices beyond Performance Year Two, the last stage of the current Developmental Contract.

**Leadership changes.** CSI experienced significant shifts in leadership in Year Two. Chris Koller, who was appointed Rhode Island’s first Health Insurance Commissioner in 2005 and was one of CSI’s original conveners and strongest supporters, left state service in June 2013 and was replaced by Kathleen Hittner, MD, a former chief executive officer for a Rhode Island hospital. In addition, as a result of the performance requirements in the Developmental Contract, OHIC took on an expanded role in coordinating submission and collection of utilization data from payers; the Office added staff for this function. During Year Two, Rhode Island Medicaid took on an expanded role in CSI decision making. Medicaid Medical Director Deidre Gifford, CSI’s first project manager, assumed greater involvement in the program in 2013. With Dr. Gifford

assuming an active role on the Executive Committee, the opportunity emerged to align Rhode Island Medicaid and CSI.

**Hospital engagement.** Program leaders worked to increase hospital engagement in the initiative. Though many local hospitals previously had been reluctant CSI partners, as one stakeholder observed, hospitals in the state had taken note of broader delivery system and payment changes aimed at reducing inpatient admissions and ER visits: “[In the past, hospitals] avoided being a part of [CSI] and now I think they recognize that they need to be part of the discussion.”

**Patient engagement.** CSI leadership worked to increase patient engagement at both policymaking and practice levels. CSI formed a patient advisory group, which held one meeting in 2013 and began the process of developing a charter. Some practices reported efforts to engage patients via Web portals and surveys, albeit with limited success.

**Provider engagement in quality measurement and improvement activities.** Practices reported increased use of provider dashboards and internal reports during 2013, possibly a result of the shift to performance contracts. One practice described using data to identify Sundays as a day when many patients went to the ER. On the basis of this information, they decided to expand office hours to include Sundays. Another physician described setting a practice goal of follow-up with patients within 5 days of discharge from a hospital stay.

**Behavioral health integration.** Program leaders worked to increase CSI’s focus on integrating behavioral health. CSI formed a new Behavioral Health Integration Workgroup with members representing behavioral health experts from CSI practices, hospitals, the state, and other organizations.

### **Major Implementation Issues During the Second Year**

**Missed utilization targets.** As in the previous year, CSI practices failed to meet utilization targets for the contract year ending in March 2013. In 2012, the first year pilot practices were subject to performance-based payments, the CSI Steering Committee chose to give the additional performance payment to pilot practices despite their failure to meet utilization performance targets. In 2013, when practices again failed to meet utilization performance targets, CSI withheld the additional performance payment.

**Health information exchange challenges.** Stakeholders continued to express frustration with slow practice and patient uptake of CurrentCare, identifying the system’s opt-in enrollment model as a barrier to efforts to engage patients. Slow patient enrollment limited the usefulness of CurrentCare for providers, who were reluctant to use a system that did not include a critical mass of patients. As of September 2013, approximately one in three Rhode Islanders was in the CurrentCare system, an increase from 2012, when 25 percent of Rhode Islanders had opted in. CurrentCare participation increased in Year Two from practices affiliated with Lifespan, a major delivery system in the state. Lifespan previously operated a separate HIE, which some stakeholders believed discouraged Lifespan providers from participating in CurrentCare, but then switched to a compatible system.

## External and Contextual Factors Affecting Implementation

**Stable political support.** Despite the shift in leadership caused by the departure of Chris Koller, as mentioned above, CSI continued to benefit from a stable political environment and a high level of enthusiasm and support among stakeholders, as it had since the program launched in 2008. Rhode Island Lt. Gov. Elizabeth Roberts remained a strong supporter of the initiative. The new state Health Insurance Commissioner, Kathleen Hittner, also was supportive, though stakeholders reported that it was too early to know what impact she would have on CSI. Despite this one area of uncertainty, the overall political environment was very favorable. As one stakeholder said, “I think we are looking at a project in a great environment. It’s close knit, everyone is on the same page, [and] the political winds are there to support this.”

**Impact of other health reform initiatives.** OHIC and the Executive Office of Health and Human Services (EOHHS) ensured that CSI leaders engaged in planning for broader delivery system reform in the state, especially in planning associated with the state’s SIM Model Design grant from CMMI. Rhode Island’s State Health Care Innovation Plan, developed in 2013, envisioned a delivery system built around multi-payer accountable care organizations (ACOs), with PCMH as a foundation. The plan called for expansions of CSI and additional CHTs throughout the state to support high-risk, high-needs patients.

Rhode Island also experienced health system transformation on the private side, including the formation of an ACO in the state. During 2013, some CSI practices were part of an ACO with multiple payers, which provided them with extra practice management and care coordination resources.

### 4.1.4 Lessons Learned

Several key lessons emerged during the second round of site visits:

**Evolving program criteria created trust and engendered ongoing stakeholder support.** Redesigning key elements of CSI through stakeholder engagement and consensus building contributed to an overall environment of optimism and confidence. As one state official put it, “[CSI has] benefited from having coherent, meaningful structure and regularly revisiting long-term goals.” Stakeholders reported increasing provider satisfaction within the PCMH practice model. This sentiment was clear as stakeholders worked to design the Developmental Contract: payers and program leaders reported that negotiations for higher PMPM rates were smooth, rather than contentious.

Satisfaction among commercial payers and Medicaid plans was also strong. Though required by law to participate, payers reported continued enthusiasm for participation, driven by evolving practice expectations encouraging high performance and by internal data demonstrating promising trends in return on investment.

**PCMH transformation became easier over time.** New practices chosen for the second cohort of participants reported fewer challenges in becoming PCMHs than practices initially selected for the pilot in 2008. Nurse care managers, a key programmatic feature of CSI, were being used more efficiently and were better settled into their role at the practices.

**Engaging “medical neighborhood” providers became a priority.** Although the new Health Insurance Commissioner had made hospital engagement a major priority, the lack of

engagement of providers from the broader “medical neighborhood,” including hospitals and behavioral health providers and specialists, may have hindered the program’s ability to affect care delivery outside primary care settings. SIM, CHTs, and the new Behavioral Health Integration Workgroup all were designed to address these issues.

**Learning collaboratives had limited success.** During our 2012 site visit, learning collaboratives were reported to have inconsistent outcomes. With the shift of practice transformation support from RIQI to BCBSRI and the Brown University team at Memorial Hospital of Rhode Island, however, there was a deliberate movement toward on-site practice coaching, or “boots on the ground,” to accommodate practice needs more effectively.

**CSI needed to plan for sustainability.** Many stakeholders identified PCMH generally, and CSI specifically, as a necessary foundation for further health system transformation and payment reform, but the future of CSI within a transformed delivery system was unclear. As a physician in one participating practice said, “[CSI] is a beautiful thing, it’s a good thing, but how are they going to sustain it?” The extension of Rhode Island’s Affordability Standards through 2018, especially the Primary Care Spend and PCMH Standards, ensured that private payers would continue to invest in primary care and in CSI. Stakeholders believed, however, that the end of the MAPCP Demonstration and Medicare’s withdrawal from the pilot would have deleterious consequences for the sustainability of the initiative—as one provider association representative put it, “If the fuel is cut off, the initiative will die.”

## **4.2 Practice Transformation**

This section seeks to answer evaluation research questions related to describing features of the practices participating in CSI; identifying changes that practices made to take part in the demonstration and meet participation requirements; describing technical assistance to practices; and summarizing practice views on the program and payment model. In this section we review the findings from the site visit in late 2013, emphasizing changes that occurred during the year since our initial interviews in late 2012.

Since the 2012 site visit, Rhode Island practices continued to evolve and adopt changes to their care coordination services, staffing, and use of data and health IT resources. Many of these changes were related to efforts to refine and improve the services provided, and some were related to the changing environment, specifically the affiliation of some practices with an ACO.

### **4.2.1 Changes Practices Made During Year Two**

In this section, we review the types of changes CSI practices made since the first site visit, as well as practice improvement projects that were adopted. These changes often arose from practices’ desire to improve their performance as PCMHs, rather than in response to specific CSI requirements.

**PCMH recognition and practice transformation.** At the end of the second year of the MAPCP Demonstration in Rhode Island, all participating practices had received NCQA PPC® PCMH™ Level 3 recognition, except one new practice with Level 2 recognition. The first round of interviews with participating practices in 2012 confirmed that all had met CSI expectations for PCMHs, and that many of these changes had been made before and independent of the CSI initiative itself. Interviews conducted in late 2013 identified this same pattern among new

practices joining CSI, and found that the initial practices continued to evolve and improve their PCMH functionality.

Increasing care coordination was a central focus in almost every practice. An emphasis on team management was evident everywhere; several practices emphasized the team structure by designing and using team conference rooms, team meetings to review data, and daily team huddles to review the patients coming in and the services they needed. One practice developed a dashboard that could be searched easily to identify patients with upcoming visits and their service needs. In contrast to our first round of interviews, many practices mentioned routine previsit planning and giving patients postvisit summaries, also available through the patient portals. Several sites mentioned improved ability to track ordered laboratory tests and consultations through their EHRs. Several practices reviewed and enhanced their compacts with consulting practices, and, as discussed below, one practice changed its compact with community behavioral health providers into a more formal contract.

More practices and more practitioners accessed patient-level data through the state-wide data repository, CurrentCare. Most practices actively promoted CurrentCare in their waiting rooms and used desk clerks to enroll patients at the time of their visit. Practices reported substantial increases in patient enrollment in CurrentCare since 2012, with enrollment ranging from 30 to 70 percent of patients. Some practices expressed disappointment, however, that enrollment was not as robust as expected.

Several practices activated a Web-based patient portal. Typically the portal allowed patients to request medication renewals, review lab test results, and request an appointment. Secure messaging was available on some portals. Provider satisfaction was generally high, with the portal perceived as a time saver and welcome change. Practices with portals actively encouraged patients checking in for their appointments to enroll, using the opportunity to simultaneously enroll them in CurrentCare. One practice was in the process of activating a cell phone app for its portal.

Compared to the 2012 site visit, a greater focus on using data to guide and improve care was evident. Practices generally used data more consistently and drew on data from more sources to evaluate their quality of care. Data sources included their own EHRs, administrative staff for the group of practices with which they were affiliated, and reports from specific Medicaid and commercial payers. Generally, practices used quality and utilization data provided by CSI and, less frequently, data provided by Medicare through the Web portal to identify the most appropriate patients for care coordination (the most complex patients or the high utilizers) and to guide performance improvement projects targeted at improving performance relative to benchmarks. Several practices used previsit summaries to address gaps identified by the data in terms of preventive services or quality measures.

Several practices adopted more aggressive approaches to reviewing their own data. Typically this meant extracting relevant reports from their own EHR to obtain more timely data (e.g., monthly reviews) or more detailed data (e.g., provider specific) on CSI quality metrics or additional metrics that they (or their parent organizations) targeted for improvement. Three factors seemed to correlate with more aggressive and more frequent data review: practice size, participation in an ACO, and access to specially trained staff devoted to data analysis. Practices that were members of an ACO received a wealth of data, some provided monthly, on quality, utilization, and patient satisfaction. In these practices, patient satisfaction was assessed either

constantly or at regular (monthly, quarterly) intervals to supplement the annual PCMH Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys conducted by CSI.

Two practices participated in the same ACO, which supplied them with extra resources for practice management, data handling, and care coordination. Other services also opened up through these arrangements, such as facilitated access to behavioral health staff, social workers, palliative care programs, and pharmacist reviews. This ACO described its infrastructure as including six full-time IT staff, three full-time EHR trainers, a director of analytics and an analytics team, a director of practice transformation, a chief medical officer, and 24/7/365 patient access.

Practices described new initiatives targeting patients with behavioral health problems, although addressing behavioral health needs remained a major challenge across the CSI practices. One practice estimated that 70 percent of their patients had behavioral health problems, typically in addition to multiple medical conditions. The interviewed practices all had arrangements to screen for depression (a CSI quality metric) and established mechanisms to provide care for patients with behavioral health problems. Some practices used on-site licensed clinical social workers (LCSWs), although the number and availability varied widely. In one practice where behavioral health care was incorporated from the start, two certified nurse specialists with prescribing privileges were available; these nurses incorporated motivational interventions for specific patients. Other practices hired or contracted for additional registered nurses or LCSWs to help with behavioral health management.

One large group established a new committee to address behavioral health, which in turn identified a new network of 45 credentialed behavioral health practitioners that agreed to provide services to practice patients with appropriate insurance. Requests for consultation with these practitioners took advantage of a new, secure Health Insurance Portability and Accountability Act (HIPAA)-compliant Web portal, which showed the specialties of the participating behavioral health providers and allowed information to be shared bidirectionally between the primary care practice and the behavioral health consultant. Once a behavioral health specialist was selected, that provider contacted the patient to make an appointment. This protocol was developed based on experience during a trial period in which many referred patients did not follow through on making appointments after being referred to a behavioral health provider.

**Practice staffing changes.** Practices generally continued to consider how best to use their existing staff and to develop new roles in support of the PCMH. As described by one physician, “In my practice we have a nurse care manager, but we also have a podiatrist, and we have a co-located psychologist and we have a registered dietician. These are things I would never have dreamed of having prior to CSI and the PCMH movement. It is very gratifying. You get so much more done when you have that type of personnel in your office.”

Almost all interviewed practices used medical assistants extensively, and recent innovations included ways to involve them more effectively in previsit planning, medication reconciliation, motivational interviewing (e.g., for smoking cessation), arranging consultation, and complying with performance measures (e.g., depression screening). One practice, which developed three competency levels within its medical assistant program with corresponding salary increments, described changes in the role of medical assistants: “At our ... CSI meeting yesterday, the medical assistants were talking about the old times when they used to weigh the

patient, open the door and put the patient in and close the door, and that was it. And now they have 10 to 12 minutes of stuff that they do with the patient before the doctor even gets there.”

Another innovation reported at several sites was the use of “health advocates,” also called “patient navigators.” These staff helped with intake for new patients and served as the liaison to community or hospital-based resources. One large organization hired 15 navigators and was training 10 more. The navigators were viewed as cost effective because they typically were relatively low-paid staff with little medical training.

Several practices mentioned having their staff participate in special training to enhance skills relevant to PCMH goals. For example, one nurse attended the Johns Hopkins course on Guided Care, and others became certified diabetes educators or took courses on asthma management or cardiovascular care. A managerial staff member became certified in medical data management.

A sore point at several practices was that nursing staff frequently were involved in activities that took them away from hands-on patient care, such as NCQA recertification, data management, and meeting insurer-specific reporting requirements. Nurses viewed these duties as something to be handled by administrative staff. The affiliation of several practices to a parent organization affected practice staffing. The parent organization provided several services formerly done by practices, including NCQA recertification and quality data review, allowing practice staff to attend to such things as care management.

**Health information technology.** All practices were required to have a functioning EHR to join CSI. Although practices were still learning and somewhat uncomfortable with EHRs in 2012, by late 2013 they generally were more at ease with their EHRs and using them more effectively. Some practices noted continuing challenges. For example, several practices had to enter laboratory values manually into their EHRs. Some practices changed their EHR and, as a result, staff had to reenter data or to look in unfamiliar places for existing data. During the 2013 site visit, practices reported using CurrentCare somewhat more frequently to access data from other organizations than they did during the 2012 site visit. Interconnections with other providers, however, remained a problem for all practices other than those affiliated with an ACO. By and large, information still was exchanged between practices by phone calls and fax.

Some practices identified recent new health IT initiatives, including

- Using CDs to transfer patient data to another practice or consultant, or to the patient at the patient’s request;
- Using new or improved software to extract relevant reports; and
- Using telehealth products to interact with patients at home (measuring blood pressure, blood sugar, and weight).

As at the time of the 2012 site visit, most practices used their EHRs to enter progress notes, generate patient education material, and order tests and consultations. Most practices did not incorporate decision support functionality, such as software programs to assist with detecting medication interactions, to identify order duplication or conflicts, or to help generate a differential diagnosis.

#### **4.2.2 Technical Assistance**

During the 2012 site visit, practices generally were critical of the technical assistance provided. In the 2013 site visit, practices seemed more satisfied with technical assistance programs, which were provided by various sources. Generally, practices noted a spirit of being in a collective learning environment in which practices helped each other.

As noted in *Section 4.1.3*, practice transformation support transitioned from TransforMED to BCBSRI and the Brown University Primary Care Transformation Initiative at Memorial Hospital of Rhode Island during 2013. CSI project management provided additional technical assistance to practices. CSI project management coordinated bimonthly meetings focused on best practices for nurse care managers. Each meeting focused on a specific topic, such as optimizing care transitions for patients or the registered nurse's role in reducing utilization. CSI also led monthly meetings for physicians, offering a similar range of topics. CSI data and reporting subcommittee meetings were perceived as another valuable source of information and support, especially in understanding feedback reports on quality and utilization metrics. A new CSI project—Partners in Best Practice—was under way, in which new practices could “shadow” an experienced CSI practice.

Local hospitals sponsored learning sessions relevant to PCMHs, as did an ACO parent organization for its affiliated practices, which invited guest speakers from out-of-state. Practices affiliated with the ACO found the internal learning sessions valuable and the content more relevant to their practice than the CSI-wide programs.

Some practices created their own training. Believing that staff now had sufficient expertise, they developed training modules for new staff using, for example, YouTube videos to demonstrate best practices for chart documentation.

Practices received aggregated data from CSI through a portal hosted by RIQI and from RTI through the MAPCP Demonstration portal. Compared to the 2012 site visit, practices reported reviewing aggregated data more regularly. All practices interviewed reviewed and discussed quarterly reports provided by CSI, which contained data on the key quality metrics used as performance targets. These reports were available approximately 5 weeks after the end of the reporting quarter. Some larger practices also reviewed quarterly reports provided by RTI summarizing utilization metrics for Medicare beneficiaries, which were available 6 to 9 months after the end of the reporting quarter. Smaller practices typically were unaware of the RTI data, or they were aware, but did not access the MAPCP Demonstration portal to obtain the data. CSI management reported that having to access the data through a separate portal deterred practices from using the CSI site and MAPCP Demonstration portals. Practices also received data provided by insurers, and some reported reviewing it, although a few commented that these data were not timely enough to be relevant.

#### **4.2.3 Payment Support**

CSI practices used MAPCP Demonstration funding for a wide range of purposes, most typically to support staff dedicated to care management or data management. Generally, the uses were similar to those described during the 2012 site visit. Some practices received the funds directly, but in other cases, funds went to a parent organization. South County Hospital administered the nurse care management payment (calculated as a separate payment in the CSI contract) for some practices in South County.

Some practices received supplemental support for their PCMH programs. One practice received a \$250,000 HRSA grant for an EHR upgrade; several received incentives from insurers; and most participated in a PCMH program sponsored by BCBSRI.

A novel program introduced during 2013 by a large practice provided a financial incentive to individual providers if they met CSI quality benchmarks, or if a department as a whole met benchmarks. This well-received program, which was the practice's internal way of dividing the CSI PMPM payment bonus (\$0.50) for achieving quality measures, was designed to align the behavior of providers with the goals of the organization.

As previously, there was a general sense that the CSI payments were valuable, but not sufficient to operate a PCMH in an ideal way. Interviewees at practices frequently identified shortages in key staff, including nurse care managers, data managers, health IT support staff, and behavioral health support staff. Although practices were disappointed that they did not receive the full incentive payment in the contract year beginning April 2013 because the overall utilization target had not been met, they were optimistic that they would be able to meet this target in the future.

#### **4.2.4 Discussion of Practice Transformation**

As during the 2012 site visit, participating practices were universally enthusiastic about CSI and, more specifically, about their ability to provide high-quality, patient-centered care in a team-based PCMH setting. Every practice interviewed firmly believed that the CSI program had enhanced the quality and timeliness of care their patients received. This view was summarized by one practice informant: "None of us could imagine going back—what a shame it would be." In the year since the first site visit, practices demonstrated a consistent pattern of maturation, growth, and creative expansion of the services offered. Comments from providers reflected these sentiments:

- I think it has helped us move and evolve... Sometimes it has prompted us to say, 'Wow, we've got to change,' or 'We really need to address this.' But that's the whole point, isn't it?
- [Before CSI] it was a very different model. It was provider-driven, episodic care, and now it is much different. I would say for the most part we have invested in enriching our staffing resources, so that we can actually implement a PCMH model of care where we actually call folks up and we're bringing them in, and we're informing them, and we're educating them and working with them. And it's not driven by acute-care.

For many providers, the transformation process was a welcome change and long overdue. One interviewee indicated that providers originally planning to retire continued working because they had more satisfaction in their jobs. Another, previously in a solo practice, summed it up this way: "It is impossible to become a PCMH by yourself. So coming here, seeing the support of the medical assistants, ...having the nurse care managers, having diabetic education, having the behavioral health here... that's invaluable."

As during the 2012 site visit, however, some providers described tension, frustration, and concern related to CSI and the transformation process. The transformation process created extra work for providers in terms of documentation and compliance requirements, and the many changes seemed overwhelming for some. One lead physician put it this way:

Physician morale is ... at its lowest.... It's too much at once. You can't push NCQA, Meaningful Use, EHRs at once, and then at the back of the mind, you have ICD-10 coming next year.... I've been in practice for 10 years. It's never been this bad.... You really are frustrated. You lose sense of what you're doing. At the end of the day, you're spending all your time documenting in a specific way.

Others physicians and practice managers expressed concern that the evaluation of CSI would fail to capture its value: "Some of the things that are the best part of it we're not really measuring—the TLC, the hands-on care that means so much to people. Are we measuring patient-centeredness? Not really, we're measuring the hard outcome data, because we trust it more."

### **4.3 Quality of Care, Patient Safety, and Health Outcomes**

#### **4.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

As they had since CSI began in 2008, CSI practices continued to report on quality measures. The required quality measures went through several iterations, based on feedback from the CSI data and reporting committee and decisions made by the CSI steering committee. Practices used their EHRs to generate the numbers reported to CSI for these quality measures and submit them via an online portal originally funded by the Beacon Community grant. Although the Beacon Community program ended in the spring of 2013, the portal still was used for CSI practices to submit their data to RIQI. RIQI compiled the data, performed quality assurance checks, and shared the information with the CSI practices through a Web portal allowing practices to compare their performance to other CSI practices. Beyond Year Two, RIQI planned to collaborate with statisticians at Brown University's schools of public health and medicine to conduct more complex analyses of the data collected from CSI practices.

Quality continued to be one of the metrics used to establish performance-based payments to CSI practices during Year Two. During the first quarter of each contract year, CSI project management determined the performance payment, based on whether or not the practice met performance target thresholds in the previous year. In the contract year beginning in April 2013, practices subject to performance-based payments (the five pilot sites and the first eight expansion sites) had to meet or exceed the target threshold (or reduce the percentage point distance between their baseline performance and the threshold by at least 50 percent, with a minimum reduction of 2.5 percentage points necessary) for at least four of seven quality measures shown in **Table 4-5** to receive payment for the quality benchmark. This requirement continued in the contract year beginning in April 2014 for practices in Performance Year One or Year Two of the Developmental Contract, although the target threshold changed.

**Table 4-5**  
**Performance thresholds for quality metrics, 2013–2014, Rhode Island**

Measure	CSI threshold for receiving performance-based payments in 2013 contract year (% of patients satisfying)	CSI threshold for receiving performance-based payments in 2014 contract year (% of patients satisfying)
BMI assessment in adults 18 to 64 years of age	50	57
BMI assessment in adults 65 years of age or older	50	69
HbA1c control of 8.0% or less in diabetic patients	67	69
Blood pressure control (< 140/90) in diabetic patients	75	76
LDL control (< 100) in diabetic patients	50	50
Tobacco cessation intervention	85	85
Blood pressure control in hypertensive patients (< 140/90)	68	72

BMI = body mass index; CSI = Chronic Care Sustainability Initiative; LDL = low-density lipoprotein.

Many practices reported developing their own internal quality reports that included CSI quality measures and other measures. Most interviewees felt that they had become proficient at generating these reports using their EHRs and could focus more on quality improvement activities to improve their measure performance. Several practices reported generating reports showing patients missing recommended preventive services, such as vaccines and cervical cancer screening. Additionally, some practices reported expanding the CSI measure reports by including the lists of patients not meeting the measure standards. Practice staff used these reports to determine which patients they needed to contact and to develop office work flow changes to improve quality of care.

As mentioned in *Section 4.2*, practices adopted a variety of strategies to improve performance on quality of care measures, including using medical assistants to do previsit planning to determine if patients were due for screenings and to conduct screenings, and purchasing on-site testing equipment for low-density lipoprotein (LDL) and hemoglobin A1c levels.

Many activities reported as having an impact on quality of care, patient safety, and health outcomes during the 2012 site visit were mentioned again in 2013. Some practices reported having group visits for patients with certain chronic conditions, such as diabetes and depression. Practices continued to e-prescribe using their EHR, as well as to do medication reconciliation. In contrast to the 2012 site visit, when most practices reported a nurse care manager or on-site pharmacist reconciling medications with patients, a few practices mentioned that medical assistants did medication reconciliation with patients. By shifting more responsibilities to medical assistants, providers and nurse care managers had more time to manage patients with complex health issues, including offering patient education about self-management of their conditions and closely monitoring health indicators.

#### **4.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes**

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization

measures. Results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in **Section 4.3.3**.

**Process of care measures.** *Table 4-6* reports covariate-adjusted differences in several process measures indicating quality of care across the MAPCP Demonstration and two comparison groups: PCMHs and non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures addressing whether beneficiaries received all four recommended actions in diabetes care or none of the quality actions, respectively. The last indicator, whether or not a beneficiary received a total lipid panel, follows the care guidance for patients with ischemic vascular disease (IVD).

We examine the probability of receiving the recommended services. These dichotomous (i.e., yes/no) indicators are modeled using logistic regression models. Estimates in *Table 4-6* are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years. A negative value corresponds to a decrease in the likelihood of receiving care, while a positive value corresponds to an increase in the likelihood. MAPCP Demonstration beneficiaries are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

**Table 4-6**  
**Rhode Island: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 1,666)	6.48	[-0.61, 13.58]	7.16	[-0.91, 15.24]
Year Two (N = 1,009)	10.12*	[2.37, 17.86]	9.05*	[1.04, 17.06]
Overall (N = 1,758)	7.85*	[0.70, 15.00]	7.88	[-0.03, 15.79]
Retinal eye examination				
Year One (N = 1,666)	4.66	[-1.24, 10.56]	-0.18	[-3.11, 2.76]
Year Two (N = 1,009)	-0.65	[-6.70, 5.39]	0.23	[-2.93, 3.39]
Overall (N = 1,758)	2.65	[-2.76, 8.06]	-0.03	[-2.67, 2.62]
LDL-C screening				
Year One (N = 1,666)	1.81	[-2.65, 6.27]	2.70	[-1.93, 7.33]
Year Two (N = 1,009)	1.28	[-4.59, 7.16]	5.34	[-0.07, 10.74]
Overall (N = 1,758)	1.61	[-3.03, 6.25]	3.70	[-0.89, 8.28]

(continued)

**Table 4-6 (continued)**  
**Rhode Island: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Medical attention for nephropathy				
Year One (N = 1,666)	-1.71	[-5.56, 2.14]	1.54	[-2.93, 6.02]
Year Two (N = 1,009)	-2.85	[-7.12, 1.41]	0.11	[-4.87, 5.10]
Overall (N = 1,758)	-2.14	[-5.69, 1.41]	1.00	[-3.35, 5.36]
Received all 4 diabetes tests				
Year One (N = 1,666)	2.91	[-0.02, 5.83]	3.90*	[1.01, 6.78]
Year Two (N = 1,009)	-0.34	[-5.00, 4.32]	2.31	[-1.64, 6.27]
Overall (N = 1,758)	1.68	[-1.36, 4.72]	3.30*	[0.41, 6.18]
Received none of the 4 diabetes tests				
Year One (N = 1,666)	-0.08	[-1.19, 1.02]	-0.39	[-2.12, 1.33]
Year Two (N = 1,009)	-1.40	[-2.94, 0.13]	-1.52	[-3.03, 0.00]
Overall (N = 1,758)	-0.58	[-1.73, 0.57]	-0.82	[-2.36, 0.72]
Total lipid panel				
Year One (N = 2,279)	-2.29	[-4.78, 0.20]	-0.83	[-3.08, 1.41]
Year Two (N = 1,588)	-1.15	[-5.75, 3.46]	0.40	[-2.91, 3.72]
Overall (N = 2,569)	-1.83	[-4.57, 0.92]	-0.33	[-2.66, 2.00]

NOTES:

- All measures are annual dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; CSI = Chronic Care Sustainability Initiative; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that CSI is associated with an increase in the likelihood that demonstration beneficiaries received **HbA1c testing** by 7.85 percentage points.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a positive trend towards receiving **HbA1c testing**, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that CSI is associated with an increase in the likelihood that demonstration beneficiaries received **all four diabetes tests** by 3.30 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain if this association will persist into Year Three.

**Preventable hospitalization measures.** Aside from studying processes of care, largely based on evidence-based guidelines, we also evaluated patient outcomes among MAPCP Demonstration and comparison practices. Some patient medical events, such as those measured with Prevention Quality Indicators (PQIs), may be preventable with adequate access to high-quality primary care services. We define avoidable catastrophic events as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, chronic obstructive pulmonary disease (COPD) or asthma in older adults, asthma in younger adults, hypertension, and congestive heart failure. The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 4-7** reports covariate-adjusted differences in these patient outcome measures.

We examine differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters in **Table 4-7**. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improvements in the quality of and access to ambulatory care, we expect demonstration beneficiaries to have a reduction (i.e., a significant negative value) in the rate of these avoidable hospitalizations.

**Table 4-7**  
**Rhode Island: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 7,924)	-0.28	[-1.92, 1.35]	0.26	[-1.01, 1.54]
Year Two (N = 9,671)	-0.28	[-1.91, 1.35]	0.63	[-0.72, 1.98]
Overall (N = 10,654)	-0.28	[-1.75, 1.19]	0.46	[-0.75, 1.67]
PQI admissions—overall <sup>2</sup>				
Year One (N = 7,924)	-1.97	[-4.01, 0.07]	0.71	[-0.97, 2.38]
Year Two (N = 9,671)	-1.08	[-3.13, 0.98]	1.70	[-1.55, 4.96]
Overall (N = 10,654)	-1.49	[-3.40, 0.42]	1.24	[-1.18, 3.66]
PQI admissions—acute <sup>3</sup>				
Year One (N = 7,924)	-0.91	[-2.02, 0.20]	0.22	[-0.63, 1.07]
Year Two (N = 9,671)	-0.59	[-1.62, 0.43]	0.53	[-0.71, 1.77]
Overall (N = 10,654)	-0.74	[-1.66, 0.18]	0.38	[-0.57, 1.34]

(continued)

**Table 4-7 (continued)**  
**Rhode Island: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
PQI admissions—chronic <sup>4</sup>				
Year One (N = 7,924)	-1.02	[-2.25, 0.22]	0.43	[-0.63, 1.50]
Year Two (N = 9,671)	-0.46	[-2.04, 1.12]	1.20	[-1.26, 3.66]
Overall (N = 10,654)	-0.72	[-2.04, 0.61]	0.84	[-0.87, 2.56]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; CSI = Chronic Care Sustainability Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the CSI is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the CSI is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.

### 4.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes

One feature of participation in CSI was that practices received performance-based payment for achieving certain thresholds on a set of quality of care measures, including several measures of care for patients with diabetes, such as HbA1c control, blood pressure control, and

LDL control. Additionally, during site visits, CSI practices described a variety of efforts to increase recommended screening for patients with diabetes, such as offering in-office HbA1c testing, addressing self-management skills of patients with diabetes, and conducting group visits for patients with diabetes. Quantitative measures calculated from administrative data on Medicare beneficiaries showed significant improvement in increased HbA1c testing overall compared with other PCMH practices in the comparison group; in Year Two, there was significant improvement relative to both the PCMH and non-PCMH comparison groups. Thus, participation in the MAPCP Demonstration was associated with some significant positive change in measures for performance-based payment, but it was unclear whether or not these associations would persist in Year Three, especially compared with non-PCMH practices. In contrast, we found no significant association with the process of care measure for IVD, which is not a focus for performance-based payments in CSI.

Quantitative analyses of data for Medicare beneficiaries did not demonstrate any significant association between the MAPCP Demonstration and the rates of potentially avoidable catastrophic events or PQI admissions. Further, despite improvements in the process of care for diabetes, we did not see any significant improvements in the PQI chronic composite measure, which includes several diabetes-related causes of preventable hospitalization. This disparity highlights the distinction between improving processes of care and improving health outcomes and the limitations of relying exclusively on process measures to assess quality of care. It may be difficult, however, to find significant associations with relatively rare events such as the preventable hospitalization measures, given the fairly small population enrolled in CSI practices. Other quality and safety efforts reported by CSI practices, such as reviewing reports before patient visits to identify missing recommended preventive services like cancer screening, would be unlikely to have been associated with improvements in these outcomes measures.

#### **4.4 Access to Care and Coordination of Care**

##### **4.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two**

During the 2013 site visit, nearly every practice described efforts to enhance its care coordination programs and expand access to care. Many requirements for practices to participate in CSI continued to promote access to care and coordination of care. The CSI Developmental Contract required practices in the Start-Up Year to hire or have on staff a nurse care manager; to create and implement after-hours protocols; to obtain at least NCQA PPC® PCMH™ Level 1 recognition; and to comply with best practices for care transitions by the end of the year. Practices in Performance Year One and Two had to meet these requirements, obtain NCQA PPC® PCMH™ Level 3 recognition, achieve at least a PCMH CAHPS score of 53 percent on Access, and develop compacts with high-volume specialists.

All practices interviewed during the 2013 site visit had an embedded nurse care manager. These nurse care managers served as the main care coordinators within a CSI practice, and, in many practices, they were the main monitors of hospital discharge data. One practice we interviewed had a separate care transition staff person with responsibility for reviewing hospital discharge data and coordinating care for patients once they left the hospital. As **Section 4.6** highlights, practices continued to find hospital discharge information and notifications untimely and challenging to use.

All CSI practices were required to have compacts with specialists. During the 2013 site visit, some practices reported enhancing their compacts with specialists. One practice group established direct-scheduling arrangements with a few cardiologists and pulmonologists. Primary care providers at this group were able to schedule same-day appointments directly for patients needing urgent care from one of these specialists. Another practice group was transitioning its compacts with specialists to contracts, which the practice considered more robust. These contracts aimed to outline more clearly the expectations for both the primary care provider and specialists than the compacts did.

During the 2012 site visit, providers indicated that addressing patients' behavioral health needs was a challenge. During the 2013 site visit, many practices noted continuing problems with access to and coordination with behavioral health providers. Some practices with behavioral health providers already on staff indicated that the staff could not see new patients. A few practices hired LCSWs to help address patients' behavioral health needs. As mentioned in **Section 4.2**, one large group of practices piloted a HIPAA-compliant Web portal allowing primary care providers to identify behavioral health providers according to their specialty and then send a direct message with the patient name and contact information to the selected behavioral health provider. The group opted to establish contracts, as opposed to compacts, with behavioral health providers included in this portal because, as one stakeholder put it, contracts have "more teeth."

Most practices had extended hours in place at the time of the first site visit in late 2012. In 2013, a few practices further expanded their hours to include evenings and weekends. Some practices found it challenging to get their providers to work on weekends and late in the evening, as well as to fund these extended hours. One practice was using money from other sources to help fund extended hours. To avoid the financial and staffing burdens of after-hours care, one smaller practice developed a relationship with a nearby urgent care clinic to provide after-hours and weekend care to its patients.

Practices commented that they found it challenging to change patients' ER use even when the practice is open. Some practices had difficulty informing their patients that the practice was open for extended hours. Further, patients could not always differentiate conditions warranting emergency care from those treatable by their primary care provider. One practice group established triage protocols with ER doctors to encourage referral of practice patients with nonurgent, primary care treatable conditions back to the primary care practice. The group expanded this initiative in 2013, so that some patients with unresolved, primary care treatable conditions would not need to be admitted to the hospital, but instead could be scheduled to see their primary care providers by 10:00 the following morning.

The number of CSI practices with a patient portal in operation increased during the year since the 2012 site visit. Practices' patient portal functionality varied considerably. Some practices used their patient portal to share disease-specific materials, while others used it simply to allow patients to contact their providers via e-mail or electronic messaging. Some practices slowly were introducing new portal functionality over time to avoid overwhelming the providers. For some practices, patient portal use remained low. One practice found it was unable to engage its Spanish-speaking patients in the portal because it was only offered in English. Another practice described expanding its portal functionality so that it could be accessed with a smartphone app in an effort to engage more patients in the portal: "We're beating our heads

against the wall to get 20 to 25 percent of our patients using the patient portal, and they don't have PCs at home, but everyone has a smartphone."

Practices also took innovative approaches to expanding access. One practice began offering free testing in its office to encourage patients to obtain regular hemoglobin A1C testing. Several practices installed on-site testing equipment to help improve compliance with testing expectations, for example, providing on-site measurement of LDL and total cholesterol.

Care coordination between CSI practices and hospitals remained limited by the fact that, with the exception of South County Hospital and Lifespan (which participates in CSI as a self-insured employer only), Rhode Island hospitals did not have a stakeholder role in CSI. CSI practices' use of CurrentCare expanded as practices signed up more patients. The HIE used in one large hospital system, which had been competing with CurrentCare, was replaced during 2013. This promoted CurrentCare as the most reliable way for practices to exchange patient information with hospitals and resulted in an increased effort by some practices to promote CurrentCare.

#### **4.4.2 Changes in Access to Care and Coordination of Care**

Our evaluation of the MAPCP Demonstration and access to and coordination of care addresses whether CSI was associated with changes in the utilization of primary care services and specialist services, and with enhanced coordination of care for Medicare beneficiaries.

**Table 4-8** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across CSI practices and two comparison groups: PCMHs and non-PCMHs. The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 4.4.3**.

The first four measures address utilization of primary care and specialist services. MAPCP Demonstration beneficiaries are expected to increase their utilization of primary care services and decrease utilization of specialist services relative to comparison group beneficiaries after the start of the demonstration. We look at the rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall visit rate, for example, if the demonstration is associated with reductions in both primary care and specialist visit rates, we also analyze the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. A higher percentage indicates greater use of primary care services relative to specialist services. MAPCP Demonstration beneficiaries are expected to have higher primary care visit percentages.

We analyze two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. CSI is expected to be associated with an increase in the follow-up visit rate and a reduction in the unplanned readmission rate.

Finally, we assess continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the

relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plan. The value of the continuity of care index, measured annually, ranges from 0 to 1. MAPCP Demonstration beneficiaries are expected to have higher values on the continuity of care index.

With the exception of primary care visits as a percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile.

These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years. A positive value corresponds to an increase in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile, while a negative value corresponds to a decrease in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.

**Table 4-8**  
**Rhode Island: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 7,924)	99.92*	[8.69, 191.16]	41.98	[-12.85, 96.81]
Year Two (N = 9,671)	33.55	[-47.74, 114.83]	0.07	[-48.62, 48.75]
Overall (N = 10,654)	64.44	[-17.82, 146.69]	19.57	[-28.05, 67.20]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 7,924)	40.48	[-2.29, 83.26]	-5.87	[-32.58, 20.85]
Year Two (N = 9,671)	0.30	[-59.41, 60.01]	-26.51	[-80.31, 27.30]
Overall (N = 10,654)	19.00	[-28.14, 66.14]	-16.90	[-54.47, 20.66]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 7,924)	23.48	[-0.95, 47.91]	14.54	[-9.87, 38.95]
Year Two (N = 9,671)	19.85	[-5.59, 45.29]	11.81	[-12.38, 36.00]
Overall (N = 10,654)	21.54	[-2.50, 45.58]	13.08	[-10.48, 36.64]
Primary care visits as a percentage of total visits (higher quintile = larger percentage)				
Year One (N = 7,179)				
1st quintile	-0.97	[-3.68, 1.74]	-2.11	[-4.49, 0.26]
5th quintile	0.45	[-0.82, 1.73]	0.79	[-0.09, 1.66]
Year Two (N = 5,595)				
1st quintile	-0.88	[-4.53, 2.76]	-0.74	[-3.06, 1.58]
5th quintile	0.36	[-1.12, 1.85]	0.25	[-0.52, 1.02]
Overall (N = 7,625)				
1st quintile	-0.93	[-3.78, 1.91]	-1.54	[-3.79, 0.71]
5th quintile	0.42	[-0.84, 1.67]	0.56	[-0.23, 1.35]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 1,031)	11.16	[-54.26, 76.59]	23.04	[-27.70, 73.78]
Year Two (N = 1,132)	3.47	[-74.25, 81.20]	-0.33	[-75.70, 75.04]
Overall (N = 1,888)	7.18	[-51.49, 65.84]	10.93	[-41.46, 63.32]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 1,263)	-42.20	[-86.34, 1.94]	23.13	[-14.50, 60.76]
Year Two (N = 1,444)	-19.19	[-59.64, 21.27]	23.86	[-13.42, 61.13]
Overall (N = 2,342)	-30.02	[-65.62, 5.58]	23.51	[-10.40, 57.43]

(continued)

**Table 4-8 (continued)**  
**Rhode Island: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care index (higher quintile = better continuity of care)				
Year One (N = 8,071)				
1st quintile	-3.86*	[-5.76, -1.95]	-0.92	[-2.36, 0.52]
5th quintile	3.26*	[1.33, 5.20]	0.62	[-0.34, 1.58]
Year Two (N = 6,388)				
1st quintile	-3.12*	[-5.50, -0.74]	-1.93	[-4.33, 0.48]
5th quintile	2.65*	[0.62, 4.68]	1.21	[-0.29, 2.70]
Overall (N = 8,450)				
1st quintile	-3.55*	[-5.48, -1.63]	-1.34	[-3.05, 0.38]
5th quintile	3.01*	[1.19, 4.83]	0.86	[-0.24, 1.96]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; CSI = Chronic Care Sustainability Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the overall estimate indicates that CSI is associated with an increase in continuity of care, as measured by concentration of visits. Specifically, CSI is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries whose ambulatory visits were most concentrated with their PCMH providers or providers

referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers.

#### **4.4.3 Discussion of Access to Care and Coordination of Care**

Improving access to care and care coordination, particularly through extended hours, compacts with specialists, and activities of the nurse care managers, was described as a major focus of CSI practices in discussions with stakeholders during site visits. Most quantitative measures of access and coordination for Medicare beneficiaries, however, did not demonstrate significant changes when compared to a comparison group of PCMH or non-PCMH practices. We did not find significant increases in primary care visit rates, nor corresponding decreases in specialist visit rates. The changes associated with initiatives intended to improve patient access, such as contacts with a nurse care manager or communication through a patient portal, possibly may not have been observed as increases in primary care visits. Further, CSI might not be associated with decreases in specialist visit rates if patients lacked adequate access to specialists before the demonstration. For example, while the required compacts with specialists were intended to improve communication between PCMHs and specialists, one practice used the compact to increase access to specialists by establishing direct-scheduling arrangements.

The absence of reductions in unnecessary ER utilization is consistent with findings from site visits. Practices described challenges in staffing extended hours and difficulties changing patients' ER utilization patterns even with extended hours. Lack of hospital engagement was cited frequently as a shortcoming of CSI, especially because, without other incentives, hospitals generally benefitted from well-used ERs. There was also no evidence that the MAPCP Demonstration was associated with increasing post-hospital-discharge follow-up visits, despite the presence of nurse care managers who monitor discharge data and are responsible for that aspect of coordination. During the site visit, nurse care managers complained about the lack of timeliness of discharge data. Low patient enrollment in Rhode Island's HIE, moreover, limited its usefulness for supporting communication between PCMHs and hospitals.

CSI practices demonstrated a significant improvement in the continuity of care index relative to the comparison group of PCMH practices, perhaps due to compacts with specialists establishing communication back to the primary care provider after a specialist visit. This finding also could have resulted from increased availability of appointments at CSI practices offering extended hours on nights and weekends.

#### **4.5 Beneficiary Experience with Care**

##### **4.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

CSI did not prescribe specific activities for participating PCMHs to undertake to improve beneficiary experience with care. CSI did require all practices to participate in an annual PCMH CAHPS survey. CSI practices in Performance Year One or Two of the Developmental Contract were eligible for an additional PMPM payment of \$0.50 over the base amount if they achieved target values on selected composite measures from the PCMH CAHPS. The target values used to determine eligibility for the additional PMPM payment in 2013 were the median practice result for the percentage of patients responding "always" for these composite measures in the 2012

survey: 53 percent responding “always” on the Access domain, and either 80 percent responding “always” on the Communication domain or 72 percent responding “always” on the Office Staff domain. Practices failing to meet these benchmarks could satisfy the metric by improving their performance and reducing the percentage point distance between their score and the benchmark by 50 percent, with a minimum reduction of 2.5 percentage points necessary.

Most practices in the pilot and first set of expansion sites achieved a 2013 score exceeding the 2012 median practice score on the three PCMH CAHPS composite measures comprising the patient experience performance metric, and they qualified for the additional PMPM payment in 2013. Eight practices qualified for the additional \$0.50 PMPM payment by exceeding the performance benchmark for at least two of the three patient experience benchmarks. Both state officials and several practices interviewed in 2013 noted that practices responded to the 2012 PCMH CAHPS results by focusing staff efforts on making improvements in areas where the survey showed poorer performance.

Interviews in 2013 with physicians and office staff in several participating practices indicated that practices had maintained, or expanded the types of, changes to improve beneficiary experience of care and focus on self-management as reported during the 2012 site visit. They also added new features. For example, additional practices implemented a patient portal to help patients access their own health information, retrieve educational materials, and contact the practice.

Similarly, during the 2013 site visit, practices (both continuing and new to CSI) continued to report a focus on helping patients identify and address self-management goals, through annual and ad hoc meetings with nurse care managers and follow-up by medical assistants during a visit. A common theme in interviews with several practices in 2013 was that all members of the care team—medical assistants, licensed practical nurses, nurse care managers, and physicians—were doing their part to focus the patient’s attention on self-management goals. Some practices noted the benefit of the education provided by a nurse care manager in conjunction with a physician visit for patients with chronic conditions. Other practices mentioned that having a nurse care manager enabled patients with a chronic condition to access a health professional on a walk-in basis, rather than waiting for a physician visit. One payer nonetheless noted that Medicaid beneficiaries were difficult to engage in their care, and that greater coordination with hospitals to reduce ER visits might be more effective than PCMH outreach to Medicaid beneficiaries after an ER visit.

New features to improve beneficiary experience of care and engagement identified in the 2013 site visit included deploying mobile applications for patients’ use, providing more auxiliary patient services at the PCMH location, and promoting PCMH features through signs in the waiting room. As described in *Section 4.4*, one health center PCMH developed a mobile application offering access to information about the provider site and access to patient information through a patient portal. This was considered especially valuable for Medicaid beneficiaries who might have a smartphone, but no personal computer. Some interviewees mentioned specific challenges in engaging the Medicare and Medicaid beneficiary populations in the PCMH model and in managing their own care. One provider noted that mobile applications and social media outreach would not be effective for the older Medicare population.

Several practices described efforts to make more services available to their patients on-site, including nutrition classes, physical therapy group sessions, tobacco cessation counseling, and blood tests for cholesterol. As one practice noted, by offering these services, the practice was putting patients more in control of their care and moving away from care driven by acute episodes. While interviews during the 2012 site visit indicated that CSI practices offered an informational brochure, at most, to patients about being part of a PCMH, at this site visit interviewees mentioned (and interviewers observed) waiting room signs about the benefits of belonging to a PCMH.

One practice described increased engagement of patients in their care: “Individually, patients are more engaged. I have 100 patients that bring their meters [glucometers] to download their readings into the EHR. They just know to bring their meters and that was not happening before.” Another provider mentioned the impact of distributing the post visit summary on patient engagement and how this recognition led to a transformation in her practice style. This provider changed her style of writing notes so that they would be understandable to the patient in the postvisit summary, saying that, “If you think about it, the whole purpose is for patient care, and if they leave here without knowing why they were here, then what have you accomplished? If you look at the patient notes, you won’t see acronyms or abbreviations. You’ll see some explanation of what I’m thinking, because I want them to know that.”

#### **4.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between CSI and changes in beneficiary experience with care are not yet available. In the final report, we will report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

### **4.6 Effectiveness (Utilization & Expenditures)**

#### **4.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures**

Rhode Island’s MAPCP Demonstration application assumed that CSI would reduce hospital admissions related to the respiratory system, circulatory system, and endocrine system, as well as ER visits. Reductions in these services would be consistent with CSI’s focus on selected chronic conditions (diabetes, coronary artery disease, and depression). Rhode Island noted in its demonstration application, however, that it took a conservative approach to estimating savings for budget neutrality, by assuming reductions in only a few categories of service, suggesting that savings might be achieved in a broader set of services.

Different impacts were assumed for pilot and expansion practices because of the varying maturity of these PCMHs. Over the 3-year demonstration, admissions related to the respiratory system, circulatory system, and endocrine system were projected to decrease by 12 percent in the pilot practices and by 8 percent among the expansion practices. ER services were expected to decline by 15 percent in pilot practices and 8 percent in expansion practices. The MAPCP Demonstration also was projected to increase office-based evaluation and management (E&M) visits by 6 percent in pilot practices and 5.5 percent in expansion practices, while hospital E&M visits would decrease by 9 percent and 6 percent and emergency E&M visits would decrease by 15 percent and 8 percent in pilot and expansion practices, respectively. Rhode Island estimated

that Medicare would realize savings of \$1,573,143 over the course of the demonstration, and \$27,577 net of payments to practices.

Practices in Performance Year One of the Developmental Contract could qualify for a \$0.50 PMPM performance payment for each of two targets related to utilization reductions—a 5 percent reduction in all-cause hospital admissions and a 7.5 percent reduction in all-cause ER visits, with both reductions measured relative to similar non-PCMH practices. In Performance Year Two, the additional PMPM payments for reductions are \$1.25 and \$0.75 for inpatient admissions and ER visits, respectively. Before adopting the Developmental Contract, practices were required to meet the utilization reduction targets for both hospital admissions and ER visits to receive the performance payment. In addition, the reduction target for ER visits had been set at 10 percent. These targets were judged to be too ambitious, and the requirements in the Developmental Contract were set to establish more realistic goals. The Developmental Contract noted that the targets would be reconsidered annually. As described in **Section 4.1**, beginning with the 2014 contract year, practices were able to satisfy the utilization metric either by achieving a specified absolute reduction in utilization or by achieving a specific reduction relative to comparison practices. CSI considered risk adjustment and better proximity matching of the CSI practices to the comparison practices.

The utilization metrics were calculated using data from four insurers participating in CSI, but include only individuals covered by commercial, Medicare Advantage, and Medicaid managed care insurance products. Data for all insurers and all lines of business are pooled. As of the end of the second year, FFS Medicare and Medicaid claims were not yet incorporated in the data warehouse used to generate these reports because of delays encountered by RIQI's data analytics contractor in signing a Data Use Agreement with CMS; they were incorporated later in 2014.

Some practices focused their care management resources more on patients considered high risk or high utilizers of health services than they had in the past. As they did during the 2012 site visit, practices continued to report that utilization data received from insurers, hospitals, and CSI were not timely or as usable as they would like.

Efforts were undertaken to make the data received by practices more actionable. The CSI data and reporting committee held sessions to train members on how to interpret reports provided by CSI. Physicians were starting to share best practices for using data they received on patient admissions to decrease readmissions. Nurse care managers also held a meeting to share best practices on using data to reduce utilization. Some practices discussed using data to target specific populations.

As they did during the 2012 site visits, some practices expressed the view that their ability to reduce ER use was impeded by poor communication from ERs. As discussed in **Section 4.1**, CSI began discussions with hospital leadership to increase hospital engagement with CSI. Some practices crafted agreements with ERs to alert the primary care physician when a patient was under observation. Physicians who had these agreements indicated that they were satisfied with their relationship with the ER and felt that this communication was reducing admissions.

#### 4.6.2 Changes in Utilization and Expenditures

**Tables 4-9** and **4-10** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between CSI and two comparison groups: PCMHs and non-PCMHs. **Table 4-9** contains measures of total expenditures, as well as specific categories of expenditures that are expected to be affected by the implementation of CSI. Estimates in this table are interpreted as the difference in the rate of growth in per beneficiary per month (PBPM) expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

CSI is expected to reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether CSI is associated with the intended utilization changes in these care categories, we observe acute-care, post-acute-care, ER, specialty physician, and imaging expenditures. We also analyze the changes in all-cause admissions and ER visits not leading to hospitalization, measured as rates per 1,000 beneficiary quarters. **Table 4-10** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits not leading to hospitalization per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.

CSI also is expected to result in higher utilization of office-based E&M visits. This service is captured in our measure of primary care physician expenditures. Positive regression coefficients indicate that CSI is associated with the expected increase in use of this service.

As described above, CSI is expected to decrease the use of some services while increasing the use of others. Overall, however, the MAPCP Demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyze the average overall Medicare PBPM expenditures and look for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 4.6.4**.

**Table 4-9**  
**Rhode Island: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 7,924)	-43.20	[-127.46, 41.06]	-8.58	[-57.99, 40.83]
Year Two (N = 9,671)	-22.41	[-112.28, 67.45]	4.60	[-59.58, 68.78]
Overall (N = 10,654)	-32.08	[-116.12, 51.95]	-1.53	[-55.54, 52.48]

(continued)

**Table 4-9 (continued)**  
**Rhode Island: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Acute-care				
Year One (N = 7,924)	-35.23	[-73.89, 3.44]	0.49	[-22.25, 23.22]
Year Two (N = 9,671)	-25.89	[-70.83, 19.06]	-6.80	[-38.14, 24.54]
Overall (N = 10,654)	-30.23	[-69.65, 9.18]	-3.41	[-27.99, 21.17]
Post-acute-care				
Year One (N = 7,924)	-15.98	[-41.31, 9.35]	-10.14	[-23.88, 3.59]
Year Two (N = 9,671)	-0.64	[-21.10, 19.81]	9.05	[-6.06, 24.15]
Overall (N = 10,654)	-7.78	[-29.15, 13.59]	0.12	[-12.88, 13.11]
ER				
Year One (N = 7,924)	-1.36	[-5.18, 2.46]	0.58	[-2.36, 3.52]
Year Two (N = 9,671)	-3.25	[-8.66, 2.16]	2.44	[-1.23, 6.11]
Overall (N = 10,654)	-2.37	[-6.34, 1.59]	1.58	[-1.24, 4.39]
Outpatient				
Year One (N = 7,924)	12.04*	[2.03, 22.04]	0.85	[-7.98, 9.69]
Year Two (N = 9,671)	2.44	[-8.71, 13.59]	-3.95	[-13.51, 5.61]
Overall (N = 10,654)	6.91	[-2.15, 15.97]	-1.72	[-9.47, 6.04]
Specialty physician				
Year One (N = 7,924)	4.29	[-2.19, 10.76]	3.41	[-0.22, 7.05]
Year Two (N = 9,671)	6.19	[-1.17, 13.55]	7.07*	[1.13, 13.01]
Overall (N = 10,654)	5.31	[-0.81, 11.42]	5.37*	[1.63, 9.11]
Primary care physician				
Year One (N = 7,924)	1.70	[-2.46, 5.86]	-1.20	[-5.58, 3.18]
Year Two (N = 9,671)	0.23	[-5.26, 5.72]	-0.37	[-4.68, 3.95]
Overall (N = 10,654)	0.91	[-3.84, 5.67]	-0.76	[-4.74, 3.22]
Home health				
Year One (N = 7,924)	3.30	[-3.03, 9.62]	5.77*	[1.24, 10.29]
Year Two (N = 9,671)	5.26*	[0.41, 10.10]	3.90	[-0.04, 7.84]
Overall (N = 10,654)	4.34	[-0.61, 9.30]	4.77*	[0.91, 8.62]
Other non-facility				
Year One (N = 7,924)	-3.99	[-10.88, 2.91]	-0.70	[-3.34, 1.94]
Year Two (N = 9,671)	-4.86	[-12.67, 2.95]	-0.96	[-3.71, 1.79]
Overall (N = 10,654)	-4.45	[-11.63, 2.72]	-0.84	[-3.22, 1.54]
Laboratory				
Year One (N = 7,924)	-2.71	[-7.91, 2.49]	-0.11	[-3.74, 3.52]
Year Two (N = 9,671)	-3.08	[-7.28, 1.11]	-1.20	[-3.73, 1.33]
Overall (N = 10,654)	-2.91	[-7.46, 1.64]	-0.69	[-3.63, 2.25]

(continued)

**Table 4-9 (continued)**  
**Rhode Island: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Imaging				
Year One (N = 7,924)	0.00	[-1.94, 1.95]	-0.37	[-1.55, 0.81]
Year Two (N = 9,671)	-0.99	[-3.12, 1.15]	-2.00*	[-3.48, -0.53]
Overall (N = 10,654)	-0.53	[-2.30, 1.25]	-1.24*	[-2.39, -0.09]
Other facility				
Year One (N = 7,924)	-0.26	[-2.78, 2.27]	-0.73	[-2.84, 1.38]
Year Two (N = 9,671)	1.40	[-1.69, 4.49]	-0.36	[-0.89, 0.17]
Overall (N = 10,654)	0.63	[-0.79, 2.05]	-0.53	[-1.53, 0.46]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the comparison group in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the comparison group. A *positive* value corresponds to faster growth relative to the comparison group.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; CSI = Chronic Care Sustainability Initiative; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- No statistically significant difference is found in the *overall* growth of **total Medicare expenditures** among beneficiaries in CSI practices relative to beneficiaries in either PCMH practices or non-PCMH practices.
- The *overall* growth in **expenditures for specialty physicians** is faster among beneficiaries in CSI practices relative to beneficiaries in non-PCMH practices.
- Relative to beneficiaries in PCMH practices, a positive estimate in Year Two suggests a potential trend towards faster growth in **home health expenditures** among beneficiaries in CSI practices, though the *overall* estimate is not statistically significant.
- The *overall* growth in **home health expenditures** is faster among beneficiaries in CSI practices relative to beneficiaries in non-PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.

- The *overall* growth in **expenditures for imaging** was slower among beneficiaries in CSI practices relative to beneficiaries in non-PCMH practices.

**Table 4-10**  
**Rhode Island: Comparison of change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 7,924)	-4.12	[-11.48, 3.24]	3.64	[-2.78, 10.07]
Year Two (N = 9,671)	-2.73	[-10.32, 4.86]	2.11	[-3.13, 7.35]
Overall (N = 10,654)	-3.38	[-10.16, 3.40]	2.82	[-2.49, 8.13]
ER visits not leading to hospitalization				
Year One (N = 7,924)	-7.00	[-25.45, 11.44]	-0.98	[-15.36, 13.39]
Year Two (N = 9,671)	-4.29	[-23.46, 14.88]	1.21	[-16.75, 19.16]
Overall (N = 10,654)	-5.55	[-23.83, 12.72]	0.19	[-15.61, 15.98]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries currently attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; CSI = Chronic Care Sustainability Initiative; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that CSI is associated with a change in the rates of **all-cause admissions** or **ER visits not leading to hospitalizations** among demonstration beneficiaries.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that CSI is associated with a change in the rates of **all-cause admissions** or **ER visits not leading to hospitalizations** among demonstration beneficiaries.

#### 4.6.3 Medicare Budget Neutrality in Year Two of the Care Transformation Collaborative

##### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention absent any fees paid on behalf of Medicare. Estimates of gross savings for CSI

through Year Two of the demonstration are based on the sum of eight quarter-specific cost regression coefficients comparing beneficiaries attributed to MAPCP Demonstration practices to beneficiaries attributed to PCMH comparison practices. Negative cost estimates denote savings, as the growth in MAPCP Demonstration costs was smaller than in the comparison group. Positive cost estimates denote losses, as the growth in MAPCP Demonstration costs exceeded that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares with the beneficiary quarter as the unit of analysis.

## **MAPCP Demonstration Fees**

In the MAPCP Demonstration, CMS paid monthly medical home fees to CSI practices for Medicare-assigned demonstration beneficiaries. CMS also made monthly payments based on Medicare-assigned demonstration beneficiaries to South County Hospital, which employs the nurse care manager for some practices, and for CSI program management.

Total monthly fees paid by Medicare were aggregated to the quarter level from claims submitted on behalf of the practices. Budget neutrality, or net savings, was determined on a yearly (or multiple-year) basis by subtracting all paid fees during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality were slightly lower than the actual fees paid, because the savings regression model excluded beneficiaries eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees were also calculated excluding beneficiaries with fewer than 3 months of demonstration eligibility.

## **Statistical Tests of Budget Neutrality**

This regression methodology allows for statistical tests of confidence that CMS and the states can place in any estimated savings. Three tests are conducted in the analysis.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration associated with a lower the level of costs in one or more demonstration quarters during the first 2 years?*
2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower MAPCP Demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings must be positive, implying systematically lower MAPCP Demonstration expenditures relative to the PCMH comparison group and controlling for beneficiary and practice characteristics.
3. The third test requires that total gross savings exceed total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid?*

## **Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures**

In addition to statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration into perspective. The first measure is the return on investment (RoI) of fees, the ratio of total gross savings to total fees paid by the MAPCP Demonstration. RoI answers the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implies budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among MAPCP Demonstration beneficiaries in the *absence* of the demonstration. This unobservable outcome is estimated by taking average Medicare expenditures observed in the comparison group and multiplying them by the number of MAPCP Demonstration beneficiaries. Viewing total gross savings in the context of this number answers the question: What was Medicare's savings as a percentage of all expenditures? The validity of the interpretation of both of these ratios, however, relies on the statistical significance of the estimate of total gross savings.

**Tables 4-11a–c** report the estimated gross and net savings for Rhode Island during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 4-11a**  
**Rhode Island: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2011: Q3 (Jul–Sept)	2011: Q4 (Oct–Dec)	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	
Difference in quarterly expenditures per beneficiary (A)	-\$35.02	-\$407.42*	-\$106.84	\$26.86	-\$129.59
Eligible beneficiary quarters (B)	6,982	6,938	7,020	7,081	28,021
Total gross savings (C = -A*B)	\$244,522	\$2,826,892	\$749,966	-\$190,161	\$3,631,217
Total MAPCP Demonstration fees (D)	\$106,207	\$106,157	\$107,551	\$123,144	\$443,058
Net savings (E = C-D)	\$138,315	\$2,720,735	\$642,415	-\$313,305	\$3,188,159
Average expenditures (PCMH comparison group) (F)	\$2,348	\$2,842	\$2,550	\$2,558	\$2,574
Total expenditures (PCMH comparison group) (G = F*B)	\$16,393,736	\$19,717,796	\$17,901,000	\$18,113,198	\$72,125,730
Average expenditures (MAPCP Demonstration) (H)	\$2,340	\$2,403	\$2,473	\$2,537	\$2,439
Total expenditures (MAPCP Demonstration) (I = H*B)	\$16,337,880	\$16,672,014	\$17,360,460	\$17,964,497	\$68,334,851

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total Gross Savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net Savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in comparison group. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (Comp) (F\*B): Weighted average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 4-11b**  
**Rhode Island: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	
Difference in quarterly expenditures per beneficiary (A)	-\$118.66	-\$114.34	-\$107.53	\$62.05	-\$67.24
Eligible beneficiary quarters (B)	7,110	8,222	8,415	8,446	32,193
Total gross savings (C = -A*B)	\$843,750	\$940,115	\$904,843	-\$524,045	\$2,164,662
Total MAPCP Demonstration fees (D)	\$124,232	\$143,306	\$145,637	\$153,140	\$566,316
Net savings (E = C-D)	\$719,518	\$796,808	\$759,206	-\$677,186	\$1,598,347
Average expenditures (PCMH comparison group) (F)	\$2,470	\$2,663	\$2,678	\$2,628	\$2,615
Total expenditures (PCMH comparison group) (G = F*B)	\$17,561,700	\$21,895,186	\$22,535,370	\$22,196,088	\$84,188,344
Average expenditures (MAPCP Demonstration) (H)	\$2,362	\$2,498	\$2,613	\$2,641	\$2,536
Total expenditures (MAPCP Demonstration) (I = H*B)	\$16,793,820	\$20,538,556	\$21,988,395	\$22,305,886	\$81,626,657

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represented a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total Gross Savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net Savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in comparison group. Weights represent product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (Comp) (F\*B): Weighted average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 4-11c**  
**Rhode Island: Estimates of gross savings, fees paid, and net savings, all years**

	Year One and Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	-\$96.25	-\$348.36	\$155.85
Eligible beneficiary quarters (B)	60,214	—	—
Eligible beneficiaries overall	10,654	—	—
Total gross savings (C = -A*B)	\$5,795,880	-\$9,384,206	\$20,975,966
Total MAPCP Demonstration fees (D)	1,009,374	—	—
Net savings (E = C-D)	\$4,786,506	-\$10,393,580	\$19,966,592
Average expenditures (PCMH CG) (F)	\$2,596	—	—
Total expenditures (PCMH CG) (G = F*B)	\$156,314,074	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,490	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$149,961,508	—	—
Return on fees (J = C/D)	5.74	—	—
Gross savings per comparison expenditures (K = C/G)	0.037	—	—

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A\*B): Weighted average of the quarterly difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). [Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.]

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (Comp) (F\*B): Average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(J) Return on fees (J = C/D): Total gross savings divided by total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2011:Q3-2013:Q2.

- Estimated differences in CSI costs per beneficiary, relative to the comparison group, range from a positive \$62.05 (2013: Quarter 2) to a negative \$407.42 (2011: Quarter 4) [**Tables 4-11a–b**]. While most estimates are negative, they are statistically insignificant in all but the second quarter of the MAPCP Demonstration (2011: Quarter 4).
- Estimated total gross savings to Medicare is a positive \$5,795,880 [**Table 4-11c: C**], but these savings are not statistically significant. The confidence interval (2-sided; 90% level) ranges from \$9 million in losses to \$21 million in savings. Net savings are estimated at \$4,786,506, but also were not statistically significant.
- The \$5.8 million savings estimate is 3.7 percent of the estimated \$156 million in comparison group costs weighted by CSI eligible beneficiaries [**Table 4-11c: K**]. The width of the confidence interval for total gross savings, however, indicates that the gross savings rate to date cannot be considered statistically different from zero.
- Total fees paid out based on CSI eligible quarters (including fees to practices, South County Hospital, and CSI) were \$1,009,374 [**Table 4-11c: D**], or \$5.59 per eligible month.<sup>4</sup> This is consistent with the fees paid by Medicare, ranging from \$4.74 to \$6.28 during the first 2 years of the MAPCP Demonstration. The fees averaged less than 1 percent of total Medicare expenditures for health services by CSI participants during the demonstration’s first 2 years [**Table 4-11c: I**].
- This translates into a positive Medicare RoI of fees of 5.74 ( $\$5,795,880 / \$1,009,374$ ) [**Table 4-11c: J**], though the confidence interval around the total gross savings estimate does not indicate statistical significance.

#### 4.6.4 Discussion of Effectiveness

CSI was expected to reduce inpatient and ER utilization by having nurse care managers embedded in PCMH practices, expanding the availability of after-hours care, and better managing care transitions. Although increases in office visits were expected to offset some of these savings, overall CSI was expected to reduce expenditures for Medicare and other payers, even after netting out fees paid to practices.

Overall, we did not find evidence that CSI was associated with significant reductions in hospital admission or ER visit rates relative to either PCMH or non-PCMH comparison practices. Despite CSI’s efforts to share best practices on interpreting utilization data reports to focus care management on specific patients, practice staff still considered the reports as not timely enough to be useful. Furthermore, practices reported challenges in reducing inpatient and ER utilization because of a lack of hospital engagement with CSI and poor communication with ERs.

The change in a few categories of Medicare expenditures for CSI practices relative to the non-PCMH comparison group perhaps reflected some focus on care transitions and primary care physicians’ general attention to reducing utilization of unnecessary services. For example, CSI practices showed an overall higher rate of growth in expenditures in home health services

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<sup>4</sup> Fees per eligible month equaled the total fees divided by MAPCP Demonstration eligible months. Eligible months equaled eligible quarters multiplied by 3.

relative to the non-PCMH comparison group (driven by changes in Year One) and similarly higher rates of growth in expenditures in Year Two relative to the PCMH comparison group. These expenditure increases might have resulted from nurse care managers' facilitation of those services for patients experiencing care transitions. The inconsistent results in Years One and Two relative to both comparison groups, however, raised questions about whether a trend will emerge in Year Three. The increase in the growth in rate of expenditures for specialty physician services relative to the non-PCMH comparison group appeared to be due to an increase in service intensity, as there were no significant changes in the rates of medical or surgical specialty visits (see *Section 4.4*).

We observed insignificant findings for total Medicare expenditures and most expenditure categories, including acute-care expenditures relative to both PCMH and non-PCMH comparison practices. Moreover, there were no significant findings for either the all-cause admission rates or ER visits not leading to hospitalizations, relative to both PCMH and non-PCMH practices. Consistent with our finding of statistically insignificant reductions in total Medicare expenditures relative to both the PCMH and non-PCMH comparison practices, the budget neutrality calculation showed gross savings exceeding the MAPCP Demonstration fees paid to CSI practices, but by an amount not statistically different from 0. The small number of Medicare beneficiaries in CSI and high variability in medical expenditures likely contributed to the absence of significant results for expenditures and utilization.

## **4.7 Special Populations**

### **4.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

As was the case during the first year of the MAPCP Demonstration, CSI did not target any subpopulation for special treatment. CSI was aimed at comprehensive practice transformation, rather than modifying treatment for specific subsets of patients. Although CSI did not focus on specific subpopulations, Rhode Island's MAPCP Demonstration application assumed that individuals with chronic conditions were especially likely to benefit from being in a PCMH. During site visits, practices described initiatives focused on patients with chronic conditions, such as diabetes. As discussed earlier, behavioral health integration was receiving increasing attention from CSI program management and providers.

### **4.7.2 Changes Experienced by Special Populations**

In all states, we provide quantitative analysis of the association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries. These special populations include those with particular conditions that could lead to higher utilization of health care (beneficiaries with multiple chronic conditions, with behavioral health conditions, or with disabilities) or those who may experience disparities in health care (beneficiaries dually eligible for Medicare and Medicaid or who belong to racial/ethnic minorities).

*Table 4-12* reports covariate-adjusted differences in total Medicare spending per beneficiary per month across the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for the above special populations in Rhode Island. The next five tables, *Tables 4-13* through *4-17*, examine the changes associated with the MAPCP Demonstration for beneficiaries with multiple chronic conditions. Care management might be expected to have a

greater association with the outcomes for this population than the Medicare population in general, and, for this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population in all states. Finally, **Tables 4-18** and **4-19** examine beneficiaries with behavioral health conditions.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in two consecutive years of Medicare claims. To identify chronic conditions, we used the Chronic Condition Indicator algorithm developed by the Agency for Healthcare Research and Quality (AHRQ) as part of the Healthcare Cost and Utilization Project. The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one that lasts 12 months or longer and meets one or both of the following conditions: (a) it limits a person's ability to care for themselves, live independently, or interact with others; (b) it requires ongoing intervention with medical products, services, and/or special equipment. In addition, beneficiaries must also be in the CMS-HCC high risk category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 22 percent of beneficiaries fit this profile in Rhode Island.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 4.7.3**. Estimates in **Table 4-12** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

**Table 4-12**  
**Rhode Island: Comparison of average change estimates for total PBPM Medicare expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Multiple chronic conditions only				
Year One (N = 1,859)	-61.04	[-261.11, 139.02]	-10.77	[-139.04, 117.51]
Year Two (N = 2,064)	-137.40	[-341.31, 66.50]	40.54	[-78.63, 159.70]
Overall (N = 2,379)	-99.82	[-285.07, 85.43]	15.28	[-95.10, 125.67]
Behavioral health conditions only				
Year One (N = 1,795)	-31.77	[-171.44, 107.90]	4.78	[-80.44, 89.99]
Year Two (N = 2,210)	-26.04	[-182.94, 130.85]	0.95	[-99.60, 101.51]
Overall (N = 2,519)	-28.73	[-164.95, 107.49]	2.75	[-83.00, 88.50]
Disabled beneficiaries only				
Year One (N = 2,802)	-52.76	[-183.98, 78.46]	0.30	[-78.28, 78.88]
Year Two (N = 3,605)	-20.12	[-135.91, 95.67]	22.26	[-59.66, 104.19]
Overall (N = 4,051)	-35.11	[-148.43, 78.21]	12.18	[-59.74, 84.11]

(continued)

**Table 4-12 (continued)**  
**Rhode Island: Comparison of average change estimates for total PBPM Medicare expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Dually eligible beneficiaries only				
Year One (N = 2,185)	-2.57	[-125.72, 120.58]	13.11	[-80.81, 107.02]
Year Two (N = 2,976)	-94.73	[-207.53, 18.07]	20.88	[-71.04, 112.80]
Overall (N = 3,333)	-53.56	[-161.65, 54.54]	17.41	[-67.35, 102.17]
Non-White beneficiaries only				
Year One (N = 773)	-154.48	[-361.64, 52.69]	-40.55	[-141.36, 60.27]
Year Two (N = 1,238)	-35.24	[-169.77, 99.29]	14.97	[-116.91, 146.85]
Overall (N = 1,368)	-84.09	[-226.31, 58.13]	-7.77	[-115.65, 100.11]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; CSI = Chronic Care Sustainability Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- No statistically significant difference are found in the *overall* growth of total Medicare expenditures among special population beneficiaries in CSI practices relative to special population beneficiaries in PCMH practices.
- No statistically significant difference are found in the *overall* growth of total Medicare expenditures among special population beneficiaries in CSI practices relative to special population beneficiaries in non-PCMH practices.

Although there was no significant association between the MAPCP Demonstration and total Medicare expenditures among beneficiaries with multiple chronic conditions in CSI practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on the outcomes for this population. In the next subsection, we further explore the association of the MAPCP Demonstration in Rhode Island with outcomes for Medicare beneficiaries with multiple chronic conditions.

### **Beneficiaries with Multiple Chronic Conditions**

Care management potentially could have greater effects on populations with multiple chronic conditions than on the general population. In the next five tables, we consider the association of the MAPCP Demonstration with changes of the subpopulation of beneficiaries with multiple chronic conditions, looking at quality of care, access to care, and expenditures. The

MAPCP Demonstration group and the PCMH and non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions. Estimates in **Table 4-13** are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. MAPCP Demonstration beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the “none” indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 4-14**. Estimates in **Table 4-14** are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improved access to ambulatory care, we would expect demonstration beneficiaries with multiple chronic conditions to have a reduction (i.e., a significant negative value) in the rate of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 4.3.2**.

**Table 4-13**  
**Rhode Island: Comparison of average change estimates for process of care indicators**  
**among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 589)	8.63	[-0.25, 17.50]	8.33	[-1.45, 18.10]
Year Two (N = 351)	9.59	[-1.73, 20.92]	13.31*	[3.33, 23.29]
Overall (N = 602)	8.99	[-0.14, 18.12]	10.18*	[0.56, 19.81]
Retinal eye examination				
Year One (N = 589)	3.81	[-2.52, 10.14]	-0.51	[-4.13, 3.11]
Year Two (N = 351)	3.02	[-1.28, 7.32]	1.95	[-1.50, 5.40]
Overall (N = 602)	3.51	[-1.48, 8.51]	0.40	[-2.45, 3.26]
LDL-C screening				
Year One (N = 589)	3.69	[-1.54, 8.92]	1.18	[-3.52, 5.89]
Year Two (N = 351)	2.29	[-7.75, 12.33]	6.25	[-1.32, 13.82]
Overall (N = 602)	3.17	[-3.21, 9.55]	3.07	[-1.71, 7.85]
Medical attention for nephropathy				
Year One (N = 589)	-2.48	[-7.30, 2.35]	-4.16	[-10.15, 1.82]
Year Two (N = 351)	-9.00*	[-14.86, -3.14]	-2.54	[-9.32, 4.23]
Overall (N = 602)	-4.91*	[-9.47, -0.35]	-3.56	[-9.36, 2.24]

(continued)

**Table 4-13 (continued)**  
**Rhode Island: Comparison of average change estimates for process of care indicators**  
**among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Received all 4 diabetes tests				
Year One (N = 589)	4.16	[-0.54, 8.86]	2.02	[-1.78, 5.82]
Year Two (N = 351)	-1.19	[-8.91, 6.53]	2.94	[-2.31, 8.19]
Overall (N = 602)	2.17	[-2.77, 7.10]	2.36	[-1.11, 5.84]
Received none of the 4 diabetes tests				
Year One (N = 589)	-0.26	[-1.31, 0.79]	0.58	[-1.86, 3.02]
Year Two (N = 351)	-0.44	[-1.51, 0.63]	-2.33*	[-4.40, -0.26]
Overall (N = 602)	-0.33	[-1.26, 0.60]	-0.50	[-2.37, 1.36]
Total lipid panel				
Year One (N = 1,033)	-0.85	[-5.03, 3.32]	1.04	[-2.48, 4.55]
Year Two (N = 665)	-3.18	[-11.06, 4.70]	1.60	[-2.58, 5.78]
Overall (N = 1,130)	-1.75	[-6.21, 2.71]	1.25	[-1.92, 4.43]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; CSI = Chronic Care Sustainability Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; LDL-C = low-density lipoprotein cholesterol.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that CSI is associated with an increase in the likelihood that demonstration beneficiaries with multiple chronic conditions received **HbA1c screening** by 10.18 percentage points.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that CSI is associated with a decrease in the likelihood that demonstration beneficiaries with multiple chronic conditions received **medical attention for nephropathy** by 4.91 percentage points.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend away from receiving **none of the four diabetes tests**, though at this time the *overall* estimate is not statistically significant.

**Table 4-14**  
**Rhode Island: Comparison of average change estimates for health outcomes among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 1,859)	-2.59	[-7.39, 2.21]	0.95	[-3.45, 5.35]
Year Two (N = 2,064)	-7.04	[-16.24, 2.15]	0.13	[-3.14, 3.40]
Overall (N = 2,379)	-4.85	[-10.81, 1.11]	0.54	[-2.54, 3.61]
PQI admissions—overall <sup>2</sup>				
Year One (N = 1,859)	-5.09	[-12.08, 1.90]	5.66	[-3.48, 14.80]
Year Two (N = 2,064)	-4.04	[-11.16, 3.07]	9.57	[-4.95, 24.09]
Overall (N = 2,379)	-4.56	[-10.75, 1.63]	7.65	[-3.90, 19.19]
PQI admissions—acute <sup>3</sup>				
Year One (N = 1,859)	-2.45	[-5.92, 1.02]	2.64	[-1.91, 7.20]
Year Two (N = 2,064)	-2.27	[-6.11, 1.57]	2.69	[-1.50, 6.89]
Overall (N = 2,379)	-2.36	[-5.52, 0.80]	2.67	[-1.36, 6.70]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 1,859)	-2.30	[-7.53, 2.94]	2.57	[-3.02, 8.15]
Year Two (N = 2,064)	-1.66	[-8.35, 5.03]	6.54	[-5.46, 18.54]
Overall (N = 2,379)	-1.98	[-7.17, 3.22]	4.58	[-3.78, 12.95]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries with multiple chronic conditions eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults and lower-extremity amputation among patients with diabetes.

COPD = chronic obstructive pulmonary disease; CSI = Chronic Care Sustainability Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the CSI is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries with multiple chronic conditions.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the CSI is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries with multiple chronic conditions.

**Table 4-15** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for the population with multiple chronic conditions. With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 4.4.2**.

**Table 4-15**  
**Rhode Island: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 1,859)	148.34	[-27.72, 324.40]	107.74	[-32.27, 247.75]
Year Two (N = 2,064)	35.41	[-87.27, 158.08]	69.19	[-55.50, 193.87]
Overall (N = 2,379)	91.00	[-50.41, 232.41]	88.16	[-41.27, 217.60]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 1,859)	66.26	[-49.92, 182.44]	7.29	[-61.16, 75.74]
Year Two (N = 2,064)	-36.66	[-160.55, 87.24]	9.24	[-75.80, 94.27]
Overall (N = 2,379)	14.00	[-95.35, 123.36]	8.28	[-57.32, 73.87]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 1,859)	62.98*	[19.90, 106.07]	31.63	[-12.12, 75.38]
Year Two (N = 2,064)	40.03	[-1.96, 82.02]	18.58	[-20.70, 57.85]
Overall (N = 2,379)	51.33*	[11.16, 91.50]	25.00	[-14.53, 64.54]
Primary care visits as a percentage of total visits (higher quintile = larger percentage)				
Year One (N = 2,034)				
1st quintile	-0.26	[-3.44, 2.92]	-2.47	[-5.36, 0.42]
5th quintile	0.20	[-2.23, 2.63]	1.50	[-0.22, 3.23]
Year Two (N = 1,472)				
1st quintile	-1.02	[-4.33, 2.29]	-3.01	[-6.11, 0.08]
5th quintile	0.74	[-1.67, 3.14]	1.73	[-0.01, 3.46]
Overall (N = 2,095)				
1st quintile	-0.56	[-3.38, 2.25]	-2.69	[-5.48, 0.10]
5th quintile	0.41	[-1.69, 2.52]	1.59	[-0.02, 3.20]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 488)	<b>-39.27</b>	<b>[-119.12, 40.59]</b>	<b>16.97</b>	<b>[-61.12, 95.07]</b>
Year Two (N = 481)	-55.96	[-147.66, 35.74]	-1.64	[-87.43, 84.15]
Overall (N = 806)	-47.37	[-114.70, 19.96]	7.94	[-59.75, 75.62]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 628)	-55.57	[-123.45, 12.32]	15.99	[-44.63, 76.61]
Year Two (N = 614)	-56.35	[-133.32, 20.63]	10.07	[-50.89, 71.03]
Overall (N = 1,019)	-55.95	[-119.84, 7.95]	13.11	[-43.99, 70.21]

(continued)

**Table 4-15 (continued)**  
**Rhode Island: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care (higher quintile = better continuity of care)				
Year One (N = 2,276)				
1st quintile	-4.06*	[-6.47, -1.65]	-0.09	[-1.38, 1.21]
5th quintile	3.31*	[1.22, 5.40]	0.07	[-0.95, 1.08]
Year Two (N = 1,673)				
1st quintile	-2.73	[-6.24, 0.79]	-0.56	[-3.87, 2.74]
5th quintile	2.24	[-0.59, 5.07]	0.41	[-2.01, 2.84]
Overall (N = 2,305)				
1st quintile	-3.52*	[-6.14, -0.91]	-0.28	[-2.12, 1.57]
5th quintile	2.88*	[0.76, 5.00]	0.21	[-1.17, 1.59]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; CSI = Chronic Care Sustainability Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that CSI is associated with an increase in the rate of **surgical specialist visits** among demonstration beneficiaries with multiple chronic conditions by 51.33 per 1,000 beneficiary quarters. The lack of statistical significance in Year Two, however, makes it uncertain whether these associations would persist into Year Three.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the overall estimate indicates that CSI is associated with an increase in continuity of care, as measured by concentration of visits. Specifically, CSI is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries with multiple chronic conditions whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers. The lack of statistical significance in Year Two, however, makes it uncertain whether these associations would persist into Year Three.

**Tables 4-16** and **4-17** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to MAPCP Demonstration practices and two comparison groups: beneficiaries with multiple chronic conditions attributed to PCMH comparison practices and beneficiaries with multiple chronic conditions attributed to non-PCMH practices. Estimates in **Table 4-16** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

The MAPCP Demonstration also is expected to result in lower utilization of services such as all-cause admissions and ER care. **Table 4-17** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 4.6.2**.

**Table 4-16**  
**Rhode Island: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 1,859)	-61.04	[-261.11, 139.02]	-10.77	[-139.04, 117.51]
Year Two (N = 2,064)	-137.40	[-341.31, 66.50]	40.54	[-78.63, 159.70]
Overall (N = 2,379)	-99.82	[-285.07, 85.43]	15.28	[-95.10, 125.67]
Acute-care				
Year One (N = 1,859)	-66.24	[-168.35, 35.87]	13.29	[-66.37, 92.94]
Year Two (N = 2,064)	-108.24*	[-201.22, -15.25]	-14.81	[-80.77, 51.16]
Overall (N = 2,379)	-87.56	[-175.32, 0.19]	-0.98	[-65.90, 63.94]

(continued)

**Table 4-16 (continued)**  
**Rhode Island: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Post-acute-care				
Year One (N = 1,859)	-27.31	[-72.00, 17.37]	-13.47	[-53.13, 26.18]
Year Two (N = 2,064)	-17.27	[-64.66, 30.12]	33.69*	[2.52, 64.87]
Overall (N = 2,379)	-22.21	[-60.94, 16.51]	10.48	[-18.05, 39.00]
ER				
Year One (N = 1,859)	-5.05	[-18.36, 8.27]	4.44	[-2.99, 11.88]
Year Two (N = 2,064)	-4.22	[-20.84, 12.39]	16.33*	[6.77, 25.90]
Overall (N = 2,379)	-4.63	[-17.43, 8.18]	10.48*	[3.09, 17.87]
Outpatient				
Year One (N = 1,859)	29.74	[-3.69, 63.17]	0.22	[-24.00, 24.45]
Year Two (N = 2,064)	5.64	[-35.69, 46.96]	8.05	[-12.59, 28.69]
Overall (N = 2,379)	17.50	[-14.00, 49.01]	4.20	[-12.54, 20.93]
Specialty physician				
Year One (N = 1,859)	6.54	[-7.86, 20.94]	3.86	[-4.35, 12.08]
Year Two (N = 2,064)	10.05	[-9.24, 29.34]	15.13	[-0.09, 30.36]
Overall (N = 2,379)	8.32	[-6.24, 22.89]	9.59	[-0.01, 19.19]
Primary care physician				
Year One (N = 1,859)	1.04	[-6.90, 8.99]	-2.78	[-12.29, 6.73]
Year Two (N = 2,064)	-5.23	[-16.41, 5.96]	-1.46	[-11.19, 8.27]
Overall (N = 2,379)	-2.14	[-11.17, 6.89]	-2.11	[-10.88, 6.66]
Home health				
Year One (N = 1,859)	13.54	[-10.47, 37.55]	21.05*	[4.36, 37.74]
Year Two (N = 2,064)	7.67	[-16.91, 32.26]	18.52*	[2.75, 34.29]
Overall (N = 2,379)	10.56	[-11.31, 32.43]	19.76*	[4.28, 35.25]
Other non-facility				
Year One (N = 1,859)	-18.22	[-37.50, 1.07]	-3.22	[-10.61, 4.16]
Year Two (N = 2,064)	-18.42	[-43.15, 6.31]	-1.29	[-7.06, 4.48]
Overall (N = 2,379)	-18.32	[-39.77, 3.13]	-2.24	[-7.75, 3.27]
Laboratory				
Year One (N = 1,859)	-3.91	[-12.53, 4.70]	-0.38	[-6.82, 6.06]
Year Two (N = 2,064)	-4.44	[-11.19, 2.30]	-2.81	[-7.67, 2.05]
Overall (N = 2,379)	-4.18	[-11.73, 3.37]	-1.62	[-7.02, 3.79]
Imaging				
Year One (N = 1,859)	-1.98	[-5.51, 1.56]	-2.38	[-4.97, 0.20]
Year Two (N = 2,064)	-3.95	[-8.17, 0.27]	-5.23*	[-8.87, -1.59]
Overall (N = 2,379)	-2.98	[-6.07, 0.12]	-3.83*	[-6.50, -1.16]

(continued)

**Table 4-16 (continued)**  
**Rhode Island: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Other facility				
Year One (N = 1,859)	2.02	[-2.78, 6.82]	-5.13	[-13.87, 3.61]
Year Two (N = 2,064)	2.16	[-5.14, 9.47]	-0.19	[-0.80, 0.41]
Overall (N = 2,379)	2.09	[-3.01, 7.20]	-2.62	[-7.22, 1.97]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries with multiple chronic conditions eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; CSI = Chronic Care Sustainability Initiative; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There are no statistically significant difference in the *overall* growth of **total Medicare expenditures** among beneficiaries with multiple chronic conditions in CSI practices relative to beneficiaries with multiple chronic conditions in either PCMH or non-PCMH practices.
- Relative to beneficiaries with multiple chronic conditions in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **acute-care expenditures** among beneficiaries with multiple chronic conditions in CSI practices, though at this time the *overall* estimate is not statistically significant.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards faster growth in **post-acute-care expenditures** among beneficiaries with multiple chronic conditions in CSI practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **expenditures for ER visits not leading to hospitalization** is faster among beneficiaries with multiple chronic conditions in CSI practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.

- The *overall* growth in **home health expenditures** is faster among beneficiaries with multiple chronic conditions in CSI practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- The *overall* growth in **imaging** is slower among beneficiaries with multiple chronic conditions in CSI practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.

**Table 4-17**  
**Rhode Island: Comparison of average change estimates for utilization among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 1,859)	-8.15	[-31.65, 15.34]	20.32	[-4.55, 45.19]
Year Two (N = 2,064)	-26.22*	[-48.55, -3.88]	12.23	[-5.73, 30.19]
Overall (N = 2,379)	-17.32	[-36.70, 2.05]	16.21	[-3.48, 35.91]
ER visits not leading to hospitalization				
Year One (N = 1,859)	13.14	[-33.93, 60.21]	29.72	[-24.91, 84.36]
Year Two (N = 2,064)	16.02	[-37.16, 69.19]	42.91	[-22.35, 108.16]
Overall (N = 2,379)	14.60	[-33.93, 63.13]	36.42	[-22.52, 95.36]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries with multiple chronic conditions eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries currently attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; CSI = Chronic Care Sustainability Initiative; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, a negative estimate in Year Two suggests a potential trend towards a decrease in the rate of **all-cause admissions** among demonstration beneficiaries with multiple chronic conditions, though at this time the *overall* estimate is not statistically significant.

Although the MAPCP Demonstration was not associated with significant changes in total Medicare expenditures among beneficiaries with behavioral conditions in CSI practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on the outcomes for this population. In the next subsection, we further

explore the association between the MAPCP Demonstration in Rhode Island and Medicare beneficiaries with behavioral health conditions.

### Beneficiaries with Behavioral Health Conditions

**Tables 4-18** and **4-19** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, for CSI Medicare beneficiaries with behavioral health conditions compared to two comparison groups: PCMHs and non-PCMHs. Research has shown that individuals with psychosocial and substance abuse disorders have substantial unmet needs for health care. Within the medical home, significant care management and coordination resources may be required to meet the needs of these patients.

No targeted interventions were implemented under CSI to improve utilization of health services and quality of care specifically for individuals with mental illness and substance abuse, although there were more frequent discussions about the importance of integrating behavioral health into PCMHs during the second year of the MAPCP Demonstration. However, individuals with mental illness and substance abuse are expected to benefit from the initiatives to improve access to, coordination of, and continuity of care with primary care and behavioral health providers. CSI is expected to increase care coordination between primary care providers and behavioral health providers for beneficiaries with mental illnesses and substance abuse disorders. Improved access and care coordination could increase use of outpatient behavioral health services and primary care visits, and, in turn, more appropriate use of outpatient care could lead to decreases in rates of hospitalizations and ER visits (both overall and for behavioral health conditions specifically). Given the potential impact on the use of both non-behavioral health and behavioral health services, we examine both types of service use and expenditures.

For this analysis, beneficiaries with behavioral health conditions are defined as those with at least one inpatient claim or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder during the 12-month period before participation in the demonstration. Using this criterion, on average, about 22 percent of the study sample was identified as having a behavioral health condition.<sup>5</sup> The expenditure outcomes of interest include total Medicare expenditures, expenditures for acute hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments.

Service utilization outcomes of interest include all-cause inpatient admissions, all-cause ER visits, outpatient visits with a principal diagnosis of a behavioral health disorder, inpatient admissions with principal diagnosis of a behavioral health disorder, and ER visits with a principal diagnosis of a behavioral health disorder. All utilization measures represent a quarterly rate of visits per 1,000 beneficiaries.

Estimates in **Table 4-18** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. Estimates in **Table 4-19** are interpreted as the difference in the rate of utilization associated with the MAPCP Demonstration.

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<sup>5</sup> A behavioral health condition was present in 23.6 percent of the MAPCP Demonstration sample, 24.9 percent of the PCMH comparison sample, and 19.5 percent of the non-PCMH comparison sample.

A *negative* value corresponds to a *decrease* in the rate of utilization, while a *positive* value corresponds to an *increase* in the rate of utilization.

**Table 4-18**  
**Rhode Island: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 1,795)	-31.77	[-171.44, 107.90]	4.78	[-80.44, 89.99]
Year Two (N = 2,210)	-26.04	[-182.94, 130.85]	0.95	[-99.60, 101.51]
Overall (N = 2,519)	-28.73	[-164.95, 107.49]	2.75	[-83.00, 88.50]
Acute-care				
Year One (N = 1,795)	-31.81	[-97.82, 34.20]	21.89	[-19.30, 63.08]
Year Two (N = 2,210)	-39.32	[-119.55, 40.90]	-12.78	[-55.88, 30.32]
Overall (N = 2,519)	-35.80	[-101.91, 30.31]	3.49	[-33.99, 40.97]
ER visits not leading to hospitalization				
Year One (N = 1,795)	1.55	[-7.71, 10.81]	5.60	[-0.97, 12.16]
Year Two (N = 2,210)	-11.54	[-30.54, 7.47]	8.21	[-3.13, 19.55]
Overall (N = 2,519)	-5.40	[-17.98, 7.19]	6.98	[-1.67, 15.64]
Total for services with a principal diagnosis of a behavioral health condition				
Year One (N = 1,795)	-1.73	[-20.30, 16.84]	15.65	[-0.73, 32.03]
Year Two (N = 2,210)	3.01	[-15.28, 21.30]	8.63	[-2.11, 19.36]
Overall (N = 2,519)	0.79	[-15.12, 16.70]	11.92*	[1.08, 22.77]
Total for services with a secondary diagnosis of a behavioral health condition				
Year One (N = 1,795)	-12.71	[-84.20, 58.79]	15.41	[-31.03, 61.86]
Year Two (N = 2,210)	-34.46	[-115.70, 46.77]	-28.12	[-74.37, 18.13]
Overall (N = 2,519)	-24.25	[-97.21, 48.70]	-7.69	[-51.09, 35.72]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

CG = comparison group; CSI = Chronic Care Sustainability Initiative; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **expenditures for services with a principal diagnosis for a behavioral health condition** is faster among beneficiaries with behavioral health conditions in CSI practices relative to beneficiaries with behavioral health conditions in non-PCMH practices. The lack of statistical significance in either Year One or Year Two makes it unclear whether this association will persist into Year Three.

**Table 4-19**  
**Rhode Island: Comparison of average change estimates for behavioral and non-behavioral health care utilization among beneficiaries with behavioral health conditions: First 2 years of MAPCP Demonstration**

Outcome	CSI practices vs. CG PCMHs		CSI practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause inpatient admissions				
Year One (N = 1,795)	-0.57	[-14.60, 13.45]	13.96*	[4.74, 23.18]
Year Two (N = 2,210)	-4.01	[-17.61, 9.58]	8.83*	[0.11, 17.54]
Overall (N = 2,519)	-2.40	[-14.66, 9.86]	11.24*	[3.43, 19.05]
ER visits not leading to hospitalization				
Year One (N = 1,795)	-9.64	[-69.92, 50.64]	20.85	[-18.29, 60.00]
Year Two (N = 2,210)	-28.05	[-101.73, 45.63]	20.63	[-40.82, 82.08]
Overall (N = 2,519)	-19.41	[-83.41, 44.59]	20.73	[-27.25, 68.72]
Behavioral health inpatient admissions				
Year One (N = 1,795)	0.27	[-1.32, 1.87]	0.56	[-0.83, 1.96]
Year Two (N = 2,210)	0.00	[-1.28, 1.27]	0.05	[-1.08, 1.18]
Overall (N = 2,519)	0.13	[-1.09, 1.34]	0.29	[-0.74, 1.33]
Behavioral health ER visits				
Year One (N = 1,795)	-2.13	[-8.17, 3.90]	5.13*	[0.20, 10.06]
Year Two (N = 2,210)	3.68	[-3.81, 11.16]	8.67*	[1.77, 15.57]
Overall (N = 2,519)	0.95	[-5.59, 7.49]	7.01*	[1.44, 12.58]
Behavioral health outpatient visits <sup>1</sup>				
Year One (N = 1,736)	19.30	[-23.28, 61.89]	34.06*	[0.42, 67.69]
Year Two (N = 2,112)	-77.85*	[-138.18, -17.51]	10.65	[-36.93, 58.22]
Overall (N = 2,433)	-31.94	[-77.31, 13.42]	21.71	[-14.46, 57.88]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration beneficiaries with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

CG = comparison group; CSI = Chronic Care Sustainability Initiative; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

- When using beneficiaries with behavioral health conditions assigned to non-PCMH practices as a comparison group, the *overall* estimates indicate that the MAPCP Demonstration is associated with an increase in the rates of **inpatient admissions** and **behavioral health ER visits** among demonstration beneficiaries with behavioral health conditions.
- When using beneficiaries with behavioral health conditions assigned to PCMH practices as a comparison group, a negative estimate in Year Two suggests a potential trend towards a decrease in the rate of behavioral health outpatient visits among demonstration beneficiaries with behavioral health conditions, though at this time the *overall* estimate was not statistically significant.

#### 4.7.3 Discussion of Special Populations

No evidence was found for significant reductions in total Medicare expenditures for any of the special populations studied, relative to both the PCMH and non-PCMH comparison groups. Similar to results for the total population, although not significant, the estimated changes in expenditures relative to the PCMH comparison group were consistently negative in both years and overall for all subpopulations. Reductions for the population with multiple chronic conditions—nearly \$100 in total Medicare expenditures and almost \$90 in acute-care expenditures—were especially large. The small number of participants in Rhode Island’s MAPCP Demonstration, further reduced in the special population analyses, may have contributed to the absence of significant findings, despite fairly large estimates. Although the estimates are not precise enough to support conclusions about whether individuals with chronic conditions are especially likely to benefit from being in a PCMH, an assumption in Rhode Island’s MAPCP Demonstration application, they do provide some suggestive evidence of larger impacts for this population. Despite concerted efforts described by some practices to improve care for those with multiple chronic conditions, however, we did not find substantial evidence that CSI was associated with improvement in processes of care, access to care, or coordination of care, nor with improvements in health outcomes as measured by avoidable catastrophic events and PQI admissions.

Challenges to addressing the needs of people with behavioral health problems as a result of inadequate provider supply and difficulties integrating behavioral health into PCMHs were mentioned frequently during the site visit, so the absence of an association with changes in expenditures and utilization for most outcomes was not surprising. Estimates for total Medicare expenditures, acute-care expenditures, and total Medicare expenditures for services with a secondary diagnosis of a behavioral health condition, however, were consistently negative for Year One and Year Two relative to the PCMH comparison group. In addition, relative to the PCMH comparison group, we found consistently negative estimates for all-cause admissions and ER visits not leading to hospitalization. The lack of significance again may have reflected the small population in CSI. However, the significant reduction in behavioral health outpatient visits relative to the PCMH comparison group in Year Two suggests potential problems accessing these services, consistent with reports from the site visit. Evidence of significant increases in inpatient admissions and behavioral health ER visits relative to the non-PCMH comparison group also raise concerns about the accessibility of behavioral health services. The implication of the significant increase in expenditures for services with a principal behavioral health diagnosis

relative to the non-PCMH comparison group is ambiguous and depends on the drivers of this increase. To the extent that it reflects the significant increase in behavioral health ER visits, this also could be an indicator of access problems. On the other hand, to the extent that it reflects increases in behavioral health outpatient visits (particularly in Year One), this could indicate improved access. CSI identified behavioral health as a major focus for Year Three, organizing a new Behavioral Health Integration Workgroup and piloting CHTs with a behavioral health focus. It will be important to continue monitoring outcomes for this group in upcoming years of the MAPCP Demonstration.

#### **4.8 Discussion of Rhode Island's Year Two Findings and Next Steps**

During the second year of the MAPCP Demonstration, support for CSI remained strong among state officials, payers, and participating practices. Participating practices continued to develop their PCMH capabilities, including refining staff roles and using nurse care managers more efficiently, using EHRs more effectively, and making greater use of data than they had in Year One. CSI incorporated performance-based payments related to quality of care, patient experience, and inpatient and ER utilization. For the most part, however, these payment incentives and progress in implementing new processes within practices were not associated with improved outcomes for Medicare beneficiaries. The evaluation of the first 2 years of CSI's participation in the MAPCP Demonstration showed few significant changes for Medicare beneficiaries on outcomes related to quality of care, patient health outcomes, access to care, coordination of care, and service utilization and expenditures. (Patient experience was not included in Year Two outcomes analyses.) To the extent that improvements occurred, they tended to be for outcomes such as processes of care that are under the direct control of the PCMH and less dependent on behaviors of external entities, such as hospitals and patients.

Although structural changes have been made within the participating practices, they faced ongoing challenges undermining their ability to affect utilization and expenditures, including lack of timely data on patient utilization and poor communication with ERs. These challenges were reflected in the absence of significant changes in total Medicare expenditures relative to both PCMH and non-PCMH comparison groups during the first 2 years overall and in either year individually. During Year Two of the demonstration, eligible practices did not meet the targets required to receive performance-based payments related to reductions in inpatient admissions and ER visits. Findings for Medicare FFS beneficiaries, who are not included in the data used by CSI to determine performance-based payments, showed a lack of association with inpatient and ER utilization.

Our analyses found that CSI participation was associated with improvements in some processes of care for diabetes. Practices were required to report quality metrics, including some for diabetes, and they received feedback on their performance on these metrics relative to other practices. HbA1c and LDL control for diabetics were two metrics used to determine performance-based payments to CSI practices and practices described a variety of efforts to increase recommended screening for patients with diabetes. Despite these improvements in care processes, there was no evidence of improvement in the chronic PQI, which includes several diabetes-related causes of preventable hospitalization.

Care coordination was a central focus of practices' activities during the first 2 years of the MAPCP Demonstration. Practice-based nurse care managers were cited as a central component of CSI and key to practices' efforts to improve access to care and care coordination. We did not find evidence, however, that CSI was associated with reductions in unnecessary ER utilization or improved care coordination after hospital discharge for FFS Medicare beneficiaries. Our analyses did show significant improvement in continuity of care (measured by the concentration of visits in a patient's medical home or by referral from a medical home provider) relative to the PCMH comparison group. While there was significant attention to developing the role of nurse care managers, practices described persistent challenges to changing patients' ER utilization patterns and ongoing barriers to improving communication with hospitals.

Although CSI did not focus on specific subpopulations, Rhode Island's demonstration application assumed that individuals with chronic conditions were especially likely to benefit from being in a PCMH. During Year Two, some practices described increasingly focusing their care management resources on high-risk patients, including those with multiple chronic conditions. We did not find evidence that CSI was associated with greater success in improving outcomes for patients with multiple chronic conditions than for the overall population. We also did not find significant changes in most utilization or expenditure measures associated with CSI for patients with behavioral health conditions, who also received increased attention during Year Two. To the extent that there were significant changes, they were generally contrary to the expected direction. During site visits, limited availability of behavioral health providers and difficulties integrating behavioral health into PCMHs were mentioned repeatedly as significant barriers to addressing patients' behavioral health problems.

Several additional factors might have contributed to the paucity of significant changes in outcomes in our analyses of the Medicare FFS population. First, during site visits we found considerable heterogeneity among the participating practices in the extent of PCMH transformation, including initiatives to promote care coordination, the sophistication of their ability to use data to guide and improve care, and their use of health IT. Smaller practices faced greater challenges, whereas practices participating in an ACO received extra resources for practice management, data analysis and interpretation, and care coordination. Second, CSI is the smallest of the MAPCP Demonstrations, and only 10,658 Medicare FFS beneficiaries were included in the outcome analyses for the first 2 years. Particularly for medical expenditures, which have high variability, it may be difficult to find statistically significant results with this level of enrollment. The challenge was even greater in analyses of special populations, where the number of participants was even smaller. Nonetheless, ongoing practice transformation efforts and the consistent pattern of utilization reductions and savings for several measures offered some encouragement about the potential for future evidence of statistically significant savings.

Since its start, primary care providers have been the core of CSI, which has been considered an important mechanism for strengthening Rhode Island's primary care infrastructure. During the second year of the MAPCP Demonstration, however, the lack of involvement of other providers, including hospitals, behavioral health providers, and specialists was seen increasingly as limiting CSI's ability to impact utilization and expenditures. Plans for Year Three of the demonstration focused on increasing engagement with the broader "medical neighborhood," including ongoing efforts to increase hospital engagement, formation of a Behavioral Health Integration Workgroup, and piloting CHTs in two areas of the state. Another

upcoming focus was increasing patient engagement through the formation of a new patient advisory group. Finally, looking ahead, CSI was considering whether mature PCMHs should continue to participate in CSI and whether CSI has a long-term role to play in a transformed delivery system.

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## CHAPTER 5 VERMONT

In this chapter, we present qualitative and quantitative findings related to the implementation of the Blueprint for Health, Vermont's preexisting multi-payer initiative, which added Medicare as a payer to implement the Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration. We report qualitative findings from our second of three annual site visits to Vermont, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the association of the demonstration with our five outcome domains, as described in *Section 1.1.2*. We also report characteristics of participating practices in the state initiative.

For the second site visit interviews, which occurred November 12 through 14, 2013, three teams traveled across the state, covering a large geographic region from St. Johnsbury in the northeast, to Burlington in the northwest, and Bennington in the southern part of the state. The site visit focused on changes and implementation experiences occurring since the last site visit in November 2012. During the site visit, we interviewed providers, nurses, and administrators from participating patient-centered medical homes (PCMHs) and collaborating organizations, including staff from community health teams (CHTs) and CHT extenders, such as Support and Services at Home (SASH) program staff, to learn about the perceived effects of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's entrance. We met with key state officials involved with the implementation of the MAPCP Demonstration to learn how the Blueprint for Health initiative, including the payment model and other efforts, such as learning collaboratives to support practice transformation, was progressing and if any changes were made to meet performance goals. We met with payers to hear their experiences with implementation and learn whether the payments to practices were effective in producing desired outcomes or whether modifications were warranted. We also met with patient advocates and provider organizations to learn if they had observed improvements in beneficiary experience with care and changes in the delivery of care.

This chapter is organized by major evaluation domains. *Section 5.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in the Blueprint for Health. *Section 5.2* reports practice transformation activities. Subsequent sections report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 5.3*); access to care and coordination of care (*Section 5.4*); beneficiary experience with care (*Section 5.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 5.6*); and special populations (*Section 5.7*). The chapter concludes with a discussion of the findings (*Section 5.8*).

### 5.1 State Implementation

In this section, we present findings related to the implementation of Vermont's Blueprint for Health and changes made by the state, practices, and payers in the second year of its MAPCP Demonstration. We focus on providing information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?
- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors are affecting implementation?

The state profile in **Section 5.1.1** of this report, which describes the status of major features of the state's initiative at the time of this report and the context in which it operates, draws on a variety of sources, including quarterly reports submitted to the Centers for Medicare & Medicaid Services (CMS) by Vermont Blueprint for Health project staff; monthly state-CMS calls; news articles; state and federal Web sites; and the site visit conducted in November 2013. **Section 5.1.2** presents a logic model reflecting our understanding of the link between specific elements of the Blueprint for Health and expected changes in outcomes. **Section 5.1.3** presents key findings gathered from the site visit regarding the implementation experience of state officials, other payers, and providers during the second year of the MAPCP Demonstration. We conclude this section with lessons learned during the first 2 years of the MAPCP Demonstration (**Section 5.1.4**).

#### **5.1.1 Vermont State Profile as of November 2013 Evaluation Site Visit**

The Vermont Blueprint for Health was launched in 2003 by Governor Jim Douglas to provide better management of chronic illness and to control costs. The initiative was codified in statute in 2006 as part of the state's health reform legislation. Since that time, the state legislature has expanded the shape and reach of the Blueprint for Health. In 2007, the legislature directed the Blueprint for Health state office to launch a pilot of PCMHs supported by CHTs in three regions of the state. In 2010, the Blueprint for Health office was directed to expand to include at least two PCMHs in each health service area (HSA) by July 2011, and to include any practice in the state that wanted to participate by October 2013. Today, primary care practices throughout the state are steadily transforming to become National Committee for Quality Assurance (NCQA)-recognized PCMHs, and CHTs are in place to support them in all 14 of the state's HSAs. CHT extender staff members have been added in all HSAs to focus solely on care for the elderly in the community through the Blueprint for Health's SASH Program.

**State environment.** Vermont has been on a path toward universal coverage since sweeping health reform legislation, Act 191, was enacted in 2006. As a preparatory step, the state was granted a Section 1115 Medicaid waiver in 2005, making the state Medicaid agency a managed care organization, allowing its Medicaid program to cover residents with incomes of up to 300 percent of the federal poverty level, while also imposing sliding-scale premiums on beneficiaries. Renewal of this 1115 waiver demonstration (known as the Global Commitment to Health) through the end of 2016 was approved by CMS in October 2013. Vermonters with incomes over 133 percent of the federal poverty level and previously covered by Medicaid under the state's Section 1115 waiver were transitioned to qualified health plans with financial help in Vermont's state-based insurance marketplace and are participating in the Blueprint for Health as well.

Vermont also received a waiver for its long-term care population. In 2011, the legislature directed state agencies to move toward a “universal and unified health system,” using the health benefit exchange authorized by the Affordable Care Act as a base. This legislation created the Green Mountain Care Board, charged with expanding health care payment and delivery systems reforms, building on the Blueprint for Health. Thus, the Vermont Blueprint for Health served as the primary care foundation for the larger goal of transforming the state’s system of health coverage.

Health care providers operate primarily in a FFS environment, although payment reform is planned and accountable care organizations (ACOs) are operating in the state. An ACO linking roughly 100 independent physicians (Accountable Care Coalition of the Green Mountains, LLC) launched in 2012. Another ACO (OneCare Vermont Accountable Care Organization, LLC) that incorporates all but one of the state’s 14 community hospitals launched in 2013. Medicare Advantage has very low penetration in Vermont, covering only 7,135 persons in 2012.

Vermont has several programs that potentially influence outcomes for participants in the Blueprint for Health or the comparison population. Building on the PCMH and CHT infrastructure, the initiatives include the following:

- The Vermont Chronic Care Initiative (VCCI) is providing targeted case management to particularly high-risk Medicaid beneficiaries and extending the work of the CHTs.
- The SASH program makes CHT extender staff for care coordination available to all Medicare beneficiaries within its catchment areas through creation of SASH panels in subsidized housing complexes. The SASH model was officially rolled out in July 2011 at one housing site. In October 2011, the program was expanded to other affordable housing providers throughout Vermont. Since then, new sites have been added every quarter. As of December 2013, there were 36.5 panels (with up to approximately 100 people per panel) serving 2,803 Medicare beneficiaries enrolled in the SASH program, as well as 456 community participants living in single-family homes or apartments, rather than in the congregate housing sites.
- Recognizing the need for better integration of behavioral health services for Medicaid beneficiaries, Vermont proposed a Section 2703 Medicaid Health Home program targeting Medicaid beneficiaries with a substance abuse disorder. This approach uses a Hub and Spoke model for integrating medication assisted therapy (MAT) services for substance abuse issues and co-occurring mental health disorders into the Blueprint for Health. Vermont Medicaid began implementing the model in January 2013 before receiving approval of its State Plan Amendment (SPA) from CMS.
- Vermont received a Model Testing award in early 2013 under the State Innovation Models (SIM) Initiative. The state is testing a range of shared savings ACO models, bundled payment models, and pay-for-performance models to improve care coordination and collaboration in the state, as well as improve performance at both population and provider level. This work builds on the Blueprint for Health infrastructure by expanding the number of practice facilitators, more closely

connecting Blueprint for Health primary care practices to specialty providers, and expanding the use of health information technology (health IT) to further promote continuous improvement in the health care system. As part of the SIM work, Vermont Medicaid launched a Medicaid Shared Savings Program at the beginning of 2014. Two organizations are participating: the OneCare ACO and Community Health Accountable Care.

**Demonstration scope.** The Blueprint for Health has expanded steadily throughout the state. The first pilot area in the St. Johnsbury HSA launched in July 2008, followed by the Burlington HSA in October 2008, and the Barre HSA in January 2010.

**Table 5-1** shows participation in Vermont’s MAPCP Demonstration at the end of the first and second years of the demonstration. The state’s goal was to have 220 NCQA Physician Practice Connections (PPC<sup>®</sup>) PCMH<sup>™</sup> recognized practices by October 1, 2013, although participation by individual practices remains voluntary. The number of participating practices with attributed Medicare FFS beneficiaries was 86 at the end of Year One (June 30, 2012). By the end of Year Two (June 30, 2013), the number of practices had increased by 30 percent to 112. The number of providers at participating practices increased by 36 percent, from 430 to 585. The cumulative number of Medicare FFS beneficiaries who had participated in the demonstration for at least 3 months was 48,848 at the end of Year One, and 65,896 at the end of Year Two—an increase of 35 percent.

**Table 5-1**  
**Number of practices, providers, and Medicare fee-for-service beneficiaries participating in the Vermont Blueprint for Health**

Participating entities	Number as of June 30, 2012	Number as of June 30, 2013
Blueprint for Health practices <sup>1</sup>	86	112
Participating providers <sup>1</sup>	430	585
Medicare FFS beneficiaries <sup>2</sup>	48,848	65,896

**NOTES:**

- Blueprint for Health practices include only those practices with attributed Medicare FFS beneficiaries, and participating providers are the providers that are associated with those practices.
- The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries ever assigned to participating Blueprint for Health practices and participating in the demonstration for at least 3 months.

ARC = Actuarial Research Corporation; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCES: <sup>1</sup> ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

In terms of all-payer participants, the state’s goal was to have its entire population, approximately 637,130 people, in PCMH practices by October 1, 2013. The number of all-payer participants enrolled was 190,167 at the end of Year One (June 30, 2012), and 262,107 at the end of Year Two (June 30, 2013). This represents an increase of 71,940, or 38 percent.

Since 2008, all major payers, both commercial and public, have been required to participate financially in the Blueprint for Health. The three major commercial insurers in the

state are Blue Cross Blue Shield of Vermont, Cigna, and the Mohawk Valley Plan Vermont. Participation by self-insured employers is voluntary, and some major employers (e.g., Fletcher Allen Health Care, an academic medical center) do not participate. The state made payments to practices for Medicare beneficiaries, in addition to Medicaid, until Medicare joined the Blueprint for Health initiative as a payer in July 2011.

**Table 5-2** displays characteristics of practices with attributed Medicare FFS beneficiaries participating in the Blueprint for Health as of June 30, 2013. There were 112 participating practices, with an average of five providers per practice. The full range of practice types was present in the Blueprint for Health, including office-based practices (54%), federally qualified health centers (FQHCs) (25%), critical access hospitals (CAHs) (12%), and rural health clinics (RHCs) (9%). These practices were located in a mixture of metropolitan (31%), micropolitan (44%), and rural (25%) areas.

**Table 5-2**  
**Characteristics of practices participating in the Vermont Blueprint for Health**  
**as of June 30, 2013**

Characteristic	Number or percent
Number of practices (total)	112
Number of providers (total)	585
Number of providers per practice (average)	5
Practice type (%)	
Office-based practice	54
Federally qualified health center	25
Critical access hospital	12
Rural health clinic	9
Practice location type (%)	
Metropolitan	31
Micropolitan	44
Rural	25

SOURCE: Actuarial Research Corporation Q8 Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration Provider File. (See Chapter 1 for more detail about this file.)

In **Table 5-3**, we report demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating Blueprint for Health practices during the first 2 years of the MAPCP Demonstration (July 1, 2011 to June 30, 2013). Beneficiaries with fewer than 3 months of eligibility for the demonstration were not included in our evaluation and this analysis. Twenty percent of beneficiaries were under the age of 65. The majority of beneficiaries (47%) were between the ages of 65 and 75 years old; 27 percent were between the ages of 76 and 85; and 10 percent were older than 85, with a mean beneficiary age of 70 years. Beneficiaries were mostly White (98%); just over one fourth (27%) were urban dwelling, and 57 percent were female. Twenty-seven percent of beneficiaries were dually eligible for Medicare and Medicaid, and 26 percent were eligible for Medicare originally because of a disability. Less than 1 percent of beneficiaries were eligible for Medicare because of the presence of end-stage renal disease (ESRD), and less than 1 percent of beneficiaries resided in a nursing home during the year before their assignment to a Blueprint for Health practice.

**Table 5-3**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries**  
**participating in the Vermont Blueprint for Health from July 1, 2011, through June 30,**  
**2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	65,896
Demographic characteristics	
Age < 65 (%)	20
Ages 65–75 (%)	47
Ages 76–85 (%)	24
Age > 85 (%)	10
Mean age	70
White (%)	98
Urban place of residence (%)	27
Female (%)	57
Dual eligibles (%)	27
Disabled (%)	26
End-stage renal disease (%)	0
Institutionalized (%)	0
Health status	
Mean HCC score groups	0.97
Low risk (< 0.48) (%)	27
Medium risk (0.48–1.25) (%)	52
High risk (> 1.25) (%)	22
Mean Charlson Index score	0.71
Low Charlson Index score (= 0) (%)	65
Medium Charlson Index score (≤ 1) (%)	18
High Charlson Index score (> 1) (%)	17
Chronic conditions (%)	
Heart failure	4
Coronary artery disease	10
Other respiratory disease	10
Diabetes without complications	15
Diabetes with complications	3
Essential hypertension	34
Valve disorders	2
Cardiomyopathy	1
Acute and chronic renal disease	5
Renal failure	2
Peripheral vascular disease	1
Lipid metabolism disorders	20
Cardiac dysrhythmias and conduction disorders	10
Dementias	1
Strokes	1
Chest pain	4
Urinary tract infection	3
Anemia	5
Malaise and fatigue (including chronic fatigue syndrome)	3

(continued)

**Table 5-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Vermont Blueprint for Health from July 1, 2011, through June 30, 2013**

Demographic and health status characteristics	Percentage or mean
Chronic conditions (%) (continued)	
Dizziness, syncope, and convulsions	5
Disorders of joint	7
Hypothyroidism	5

NOTES:

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to a patient-centered medical home after the start of the demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Percentages may not add up to 100 because of rounding.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid

HCC = Hierarchical Condition Category; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: Medicare claims files.

Using three different measures—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions—we describe beneficiaries' health status during the year before their assignment to a Blueprint for Health practice. Beneficiaries had a mean HCC score of 0.97, meaning that Medicare beneficiaries assigned to a Blueprint for Health practice were predicted to be 3 percent healthier, or 3 percent less costly, in the year before assignment to a Blueprint for Health practice than an average Medicare FFS beneficiary. In addition, beneficiaries had an average Charlson Comorbidity Index score of 0.71, and almost two thirds (65%) of the beneficiaries had a low (zero) score, indicating that they did not receive medical care for any of the 18 clinical conditions in the index in the year before their assignment to a participating Blueprint for Health practice.

The most common chronic conditions diagnosed among the Medicare FFS beneficiaries were hypertension (34%), lipid metabolism disorders (20%), diabetes without complications (15%), coronary artery disease (10%), other respiratory disease (10%), and cardiac dysrhythmias and conduction disorders (10%). Less than 10 percent of beneficiaries were treated for any of the other conditions.

**Practice expectations.** Practices that joined the Blueprint for Health initiative before January 1, 2012, were required to reach at least Level 1 PCMH recognition based on 2008 NCQA PPC® PCMH™ standards. Practices becoming recognized as PCMHs after January 1, 2012, must reach at least Level 1 PCMH recognition based on 2011 NCQA PCMH recognition standards. NCQA PCMH recognition is valid for 3 years after which practices must reapply for recognition. The Vermont Child Health Improvement Program assesses practices for the Blueprint for Health every 3 years, scoring them in preparation for submission of their information to NCQA. In addition, Vermont requires practices to meet the following criteria:

- Designate a quality improvement team that meets at least monthly and works with the state quality improvement program, EQuIP (Expansion and Quality Improvement Program).
- Have an agreement with their local CHT and integrate CHT services into their practice.
- Enter into an agreement with Vermont Information Technology Lead (VITL) and demonstrate progress toward communicating with the DocSite clinical registry.

The state also provides learning collaboratives for Blueprint for Health physician leaders, nurses, officer managers, and other staff.

**Support to practices.** Private and public payers pay PCMHs on a scale ranging from \$1.20 to \$2.39 (for those with 2008 recognition) or \$1.36 to \$2.39 (for those with 2011 recognition) per member per month (PMPM), depending on their NCQA PCMH score. From July 1, 2011, to June 30, 2013, demonstration practices received a total of \$7,975,224 in Medicare MAPCP Demonstration payments.

Each CHT receives \$350,000 annually to support a general patient population of 20,000; this covers approximately five full-time positions in multiple disciplines within the core CHT. Each payer (with the exception of Medicare) contributes a percentage of the total CHT budget. Changes in insurer market shares led to the renegotiation of these percentages in 2013. The contributions of Blue Cross Blue Shield of Vermont and Vermont Medicaid increased from 22 percent to 24.22 percent of the total cost of the CHT, while the proportion contributed by Cigna decreased from 22 percent to 18.22 percent. Mohawk Valley Plan, a small health plan, contributes 11.12 percent. Medicare made a \$1.59 PMPM payment based on actual enrollment of Medicare beneficiaries, an increase from \$1.55 PMPM in Year One. Additionally, under the MAPCP Demonstration, the Medicare program made a \$3.19 PMPM payment to support the SASH program in Year Two. An additional \$1.89 PMPM payment from Medicare was approved in 2013 to address underfunding issues, bringing Medicare's total SASH PMPM payment to \$5.08.

The composition and skills of the CHT staff are decided at the HSA level, based on local needs. CHTs coordinate care, services, referrals, transitions, and social services; provide self-management support and counseling to individuals with chronic illness; and incorporate extenders, including the SASH program staff and the VCCI care coordinators. Under an agreement with the Blueprint for Health, Health Dialog, a private organization providing care management and decision support, trained practice facilitators, CHT staff, and practice staff in shared decision making in 2012 and are providing staff with access to decision aids to support implementation of shared decision making. CHTs have begun providing motivational interview training to providers and holding Healthier Living self-management workshops.

The Vermont Blueprint for Health has invested significantly in practice transformation assistance, funding EQuIP to provide practice facilitation. EQuIP facilitators teach the primary care practices change theory; assist with practice team development, NCQA application preparation, implementation of electronic health records (EHRs), and rapid change cycle projects

focused on patient-centered care; and coordinate with CHTs and other practice supports. According to the Vermont Child Health Improvement Program's EQuIP Facilitators' Reports on Encounters with Primary Care Practices (Krulowitz & Adams, 2013), facilitators reported spending on average between 6 and 10 hours a month with practices preparing for NCQA recognition.

In addition, the Blueprint for Health registry vendor (Covisint) provides on-site help connecting practices with the DocSite registry and on-site training to enable practices to generate their own reports. Blueprint for Health staff have collaborated with IT partners to provide more intensive health IT support to practices through a "sprint" process, with the goal of establishing accurate, timely and reliable data reporting. VITL launched a new Web site, called VITL Access, in 2014. VITL Access allows providers to search and retrieve a range of records, including clinical summaries, medication histories, laboratory results, and hospital discharge summaries.

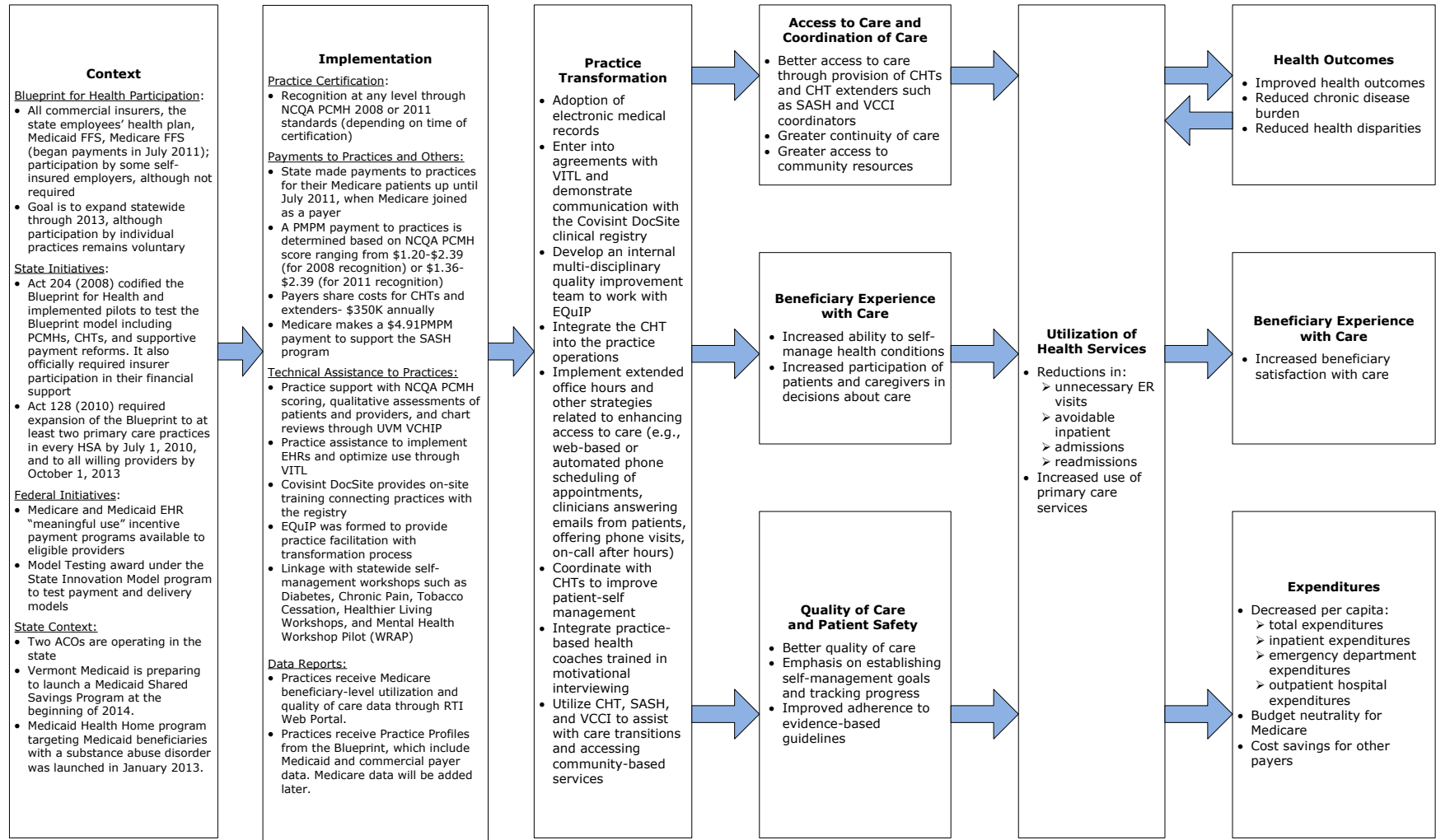
CHTs work with practices, particularly small practices, 6 months before NCQA scoring to help them meet the more stringent 2011 NCQA PPC<sup>®</sup> PCMH<sup>™</sup> requirements. A Memorandum of Understanding allowing for the "front-loading" of CHT payments to facilitate this work is in place for commercial payers and Vermont Medicaid, but not for Medicare.

### **5.1.2 Logic Model**

*Figure 5-1* portrays a logic model of Vermont's Blueprint for Health initiative. The first column describes the context for the initiative, including the scope of the state's initiative, other state and federal initiatives affecting the Blueprint for Health initiative, and the key features of participation in the Blueprint for Health. The next two columns describe the implementation activities, which incorporated several activities to promote transformation of practices to PCMHs and the establishment of CHTs.

The Blueprint for Health employs strategies to (1) improve access to and coordination of care through the use of CHTs; (2) improve beneficiaries' experience with care by enhancing their knowledge of their health conditions through self-management education and communication with their care providers and by increasing their engagement in decision making about their care; and (3) increase quality of care and patient safety by establishing self-management goals and tracking progress. Successful interventions are expected to promote more efficient utilization patterns, including increased use of primary care services and reductions in emergency room (ER) visits, avoidable inpatient admissions, and readmissions. These changes in utilization patterns are expected to produce further outcomes, including improved health outcomes (e.g., lower hemoglobin A1C levels for patients with diabetes), greater beneficiary satisfaction with care, and decreased expenditures consistent with reductions in utilization, resulting in budget neutrality for the Medicare program and cost savings for other payers involved in the initiative.

**Figure 5-1**  
**Logic model for Vermont's Blueprint for Health**



FFS: fee-for-service; PCMH: Patient Centered Medical Home; CHTs: Community Health Teams; ACA: Affordable Care Act; EHR: electronic health record; ACOs: Accountable Care Organizations; NCQA: National Committee for Quality Assurance; PMPM: per member per month; UVM VCHIP: University of Vermont, Vermont Child Health Improvement Program; VITL: Vermont Information Technology Leaders; EQUIP: Expansion & Quality Improvement Program; SASH: Support and Services at Home; VCCI: Vermont Chronic Care Initiative; ER: emergency room

### 5.1.3 Implementation

This section uses primary data gathered from the site visit to Vermont in November 2013 and other sources, to present key findings on the implementation experience of state officials, payers, and providers to address the evaluation questions described in **Section 5.1**.

#### Major Changes During the Second Year

**Initiative maturation.** Vermont's Blueprint for Health is well established in the state. As a result, minimal changes to the overall structure of the Blueprint for Health were made in Year Two of the MAPCP Demonstration. In Year Two, participating practices continued to mature, demonstrating transformation progress. Likewise, the CHTs and SASH teams were integrated more effectively into practice workflow and the local community; the "cultural change" necessary for building and leveraging these relationships has now firmly taken root. One state official noted growing comfort with leveraging CHT strengths: "I see different strategies emerging from the practices [on how best to utilize CHTs], and they each have different focuses."

**Increase in the number of pediatric practices.** An influx of pediatric practices—pediatric participation grew from 11 practices to 16 during Year Two of the demonstration—also prompted CHTs to reevaluate the types of staff offered to practices (e.g., social workers instead of diabetic educators), recognizing that children have different needs from adults and making adjustments to meet the needs of pediatric practices. During the site visit, one pediatrician said that the Blueprint for Health model does not fit pediatrics well, and he spent more than a year trying to make it fit before he found out that he had the right to adapt the model.

**Substance abuse support.** Vermont Medicaid began financing a new delivery model for opioid addiction treatment in 2013, the Hub and Spoke initiative. By the end of 2013, this new feature of the Blueprint for Health was operating in five hub regions and was supported by a Health Homes SPA. A hub is a regional treatment center responsible for coordinating the care of people with complex addictions and mental health conditions across the systems of care. A spoke is the care system composed of a prescribing physician and collaborating health and addictions professionals who monitor adherence to treatment, coordinate access to recovery supports, and provide counseling and case management services. The Blueprint for Health added one licensed mental health/substance abuse clinician and a registered nurse to CHTs for every 100 people being treated for opioid addiction.

**Improved data acquisition and feedback.** Vermont's health IT strategies shifted in 2013. State policymakers reported that the sprint process developed by the state in 2012 to improve data transmission and reporting evolved into a more general data and quality improvement effort. VITL launched VITL Access, a secure Web site allowing providers to query a range of clinical information from the Vermont Health Insurance Exchange (VHIE). While a subset of the content in VITL Access is very similar to content available through DocSite, it is not duplicative.

## Major Implementation Issues During the Second Year

**Health information technology challenges.** Implementation of health IT encountered a variety of challenges. A state official commented that the health information infrastructure required a lot of time and money, and, at the time of our site visit, it still was not what had been envisioned. A new query-based provider portal, the VHIE viewer, had not launched, and work on integration of claims and clinical data into a single platform had not yet occurred. Another challenge was the “consent to view” policy for access to patient Integrated Health Records in DocSite. This policy was implemented in 2013 and applies both to DocSite and VITL Access. The policy is deliberately restrictive and onerous, according to key informants: patients had to give consent affirmatively to their primary care provider, hospital, and each specialist to view their records in the system. Respondents were concerned that this would limit use of the health information system and providers’ ability to get comprehensive health information for their patients. One respondent also noted that it was hard to get multiple agreements from people who already were wary about sharing their information.

The biggest health IT challenge mentioned by respondents, however, related to the statewide clinical registry, DocSite. The primary concern was that the data were not reliable and could not be used for reports. CHTs and practices noted that the interface between the practices’ EHRs and DocSite was a major part of the problem. One practice reported using DocSite without any problems until they converted to an EHR. Respondents also reported other problems with the system. Two providers said that they could not make patients inactive after the patient had left the practice or died, which contributed to unreliable population reports. Many practices had connectivity issues and, while manual uploading of information is still common, providers in rural areas often could not enter data directly. Physicians also often did not enter the information correctly. A SASH respondent reported that they found it difficult to use, the manual was not helpful, and they had not had time to attend the DocSite trainings.

Respondents described intensive efforts to resolve the problems with DocSite over the past year (see *Support to Practices* section in 5.1.1). They noted that, although these efforts were extremely time consuming, they improved practices’ ability to connect with and use the program in a meaningful way. One CHT respondent also commented that DocSite staff were responsive, taking suggestions well and attempting to adapt the program to meet their needs.

**Utilization of DocSite varied.** Although most practices, CHTs, and SASH staff reported faithfully entering data into DocSite, few used it to run reports. As one CHT respondent said, “The long-term plan for the state is that the Health Information Exchange will have DocSite as a component and we are committed to that, so we’ll keep sending information. But DocSite hasn’t been reliable enough for reporting.” Most practices with EHRs said that they ran the reports they needed with their EHRs, and the EHR data were more reliable. Some were using DocSite more extensively. For example, a CHT respondent said that DocSite did not work in their clinics, but the CHT and SASH were using it. One provider said that DocSite reports were helpful and gave their practice a better feel for their population’s needs. A CHT respondent said that several small practices were using the DocSite visit planners. Another CHT respondent added that, after an intensive effort to resolve the problems with DocSite over the past year, it improved significantly: “It is still not our favorite program, but it is working.”

**Burdensome documentation requirements.** The primary concern of interviewees was the significant amount of time required for both providers and SASH staff to document care provided to patients. While many respondents acknowledged the benefits of documentation for generating usable data, one commented that the required documentation was especially burdensome for providers in solo practice, and that this led some to drop out of the program. Some also commented that the focus on documentation distracted from patient care. A SASH respondent said that she always did assessments first on paper, because “the computer can be a burden and a barrier to the conversation with the patient. It is not good patient-centered care.” This resulted in extra work later to enter the information into the computer. A respondent from a practice said that they found the EHR harder to use than paper records because they used a variety of visual cues with paper (such as different colors of paper, or putting a particular piece of paper on top) that they could not use with the EHR.

**Lack of CHT accountability.** Commercial payers expressed continued frustration at what they perceived to be the lack of accountability for CHTs. As one commercial payer noted, “We have no reporting that comes out of the CHTs, and they aren’t standardized anyway in terms of staffing or services provided,” and, as a result, “we are giving a lot of money to these teams and have nothing to show for it.” A state respondent noted that CHTs needed to track patients in the practices’ EHRs and said that it wasn’t reasonable for them to “double track” patients separately for EHRs and insurance companies. He further noted that “Insurers want to look at this in the traditional sense that ‘I’m paying for this person, what’s my return on investment for that person?’ ... What we have asked the insurers to do is to look at this like an ecology... ‘Look at your members and beneficiaries in the medical home and CHT environment. That’s how you count them.’”

**Reservations about the Hub and Spoke program rollout.** Stakeholders expressed mixed feelings about the Hub and Spoke initiative. Several Blueprint for Health practices said that they were not interested in participating as buprenorphine prescribers for the spokes. They felt that the benefits were not sufficient to overcome the considerable burden involved in implementing the model. Most providers commented that they had very few patients in need of the program. Providers observed that the patients were very difficult to work with, and that attending to their needs would take away from providing primary care services to their current patients. As one practice member said, “We are not trained and do not have any desire to handle this.” Another challenge was that being a spoke required onerous credentialing, and the logistics of distributing buprenorphine could be problematic. The lack of psychiatric counseling at the hub level also was cited as a major shortcoming of the program, reflecting a broader problem throughout the state. One provider association staff person commented that, “Of all the problems the Vermont health care system has, the most acute is the lack of psychiatrists.”

Despite these challenges, a CHT respondent said that four of their practices were involved in the Hub and Spoke program, and it was going well—they still were designing the program, but “We’ve been doing this for a year, and it is beginning to click.” One provider who served as a spoke said that, although the population was very difficult to work with and he had two of his nurses quit, he found the program very rewarding “because you see people get better. I mean, really get better.” He noted, however, that the “original propaganda was that these patients be brought into clinic as normal patients, treated as if they had high blood pressure, and everything would be peachy.” That did not prove to be accurate, and the practice underwent a

dramatic shift in their approach to these patients, with special buprenorphine clinics twice a week and a therapist there for every visit.

## **External and Contextual Factors Affecting Implementation**

**Impact of other health reform initiatives.** While stakeholders generally viewed the Blueprint for Health as the foundation for health reform in Vermont, additional payment and delivery system reform initiatives emerged that added complexity to Vermont's health care landscape and raised questions about how they will integrate with the Blueprint for Health. These initiatives overlap with the Blueprint for Health, as some practices participating in the Blueprint for Health are also participating in Medicare Shared Savings Program ACOs, commercial ACOs, or the new Medicaid Shared Savings Program launched by Vermont in 2014.

ACOs are playing an increasingly large role in Vermont's delivery system. Participants in ACOs are focusing on intensive redesign of practices, encompassing a range of investments in retraining office staff, including front-desk clerks and physicians. Interviewees from CHTs worried about duplicative services offered within ACOs. An interviewee from a practice thought that the CHTs would be important to the effective functioning of ACO models because of their relationships with and influence on patients: "I think the thing that will make or break the ACO is the patient factor—as providers, we know what we should be doing for our patients. It's just hard to control patient behavior, and you can only do so much as a provider."

Vermont's SIM Model Testing grant builds upon the framework established by the Blueprint for Health and continues fostering ACOs in the state. A stated goal of the initiative is to increase organizational coordination and financial alignment between the Blueprint for Health's primary care practices and specialty care (e.g., mental health and substance abuse services and long-term services and support). Despite guarded optimism on the part of payers and providers, the SIM initiative and the move toward ACOs has generated some uncertainty among stakeholders about how exactly the Blueprint for Health fits in; one stakeholder mused that "the Blueprint is not going to drive the ACOs, logically it would be the other way around." Further, with so much simultaneous reform activity ongoing, one state official worried about the possibility of "innovation fatigue" in the future: "I worry that people will be overwhelmed." A CHT staff person voiced concern that the ACO activity and SIM grant will add duplicative services and resources across the state.

### **5.1.4 Lessons Learned**

Several key lessons emerged during the second round of site visits.

**Practice transformation takes time.** Despite the longevity of the Blueprint for Health, Year Two of the MAPCP Demonstration was a formative year for practices. Community networks in the state continued to strengthen as CHTs and practices better aligned their efforts.

**Limited resources were a barrier.** Time and financial resources in particular remained stretched for many participants. Many respondents commented that they did not have enough staff to meet the needs of the program. This insufficiency seemed especially acute for the SASH program. One respondent commented that the Blueprint for Health needed to do more to build support among providers, because reimbursement rates were so low and not sufficient alone to

motivate them to participate in the Blueprint for Health. One practice commented that the learning collaboratives were not very useful, and that it was prohibitively expensive for practices to send multiple providers for several days of training.

Other challenges centered on extending the reach and effectiveness of Blueprint for Health and on evaluating its success. Numerous respondents mentioned challenges in rural areas, related to both transportation and communication. A state-level respondent commented that the program was doing a good job of connecting people already receiving primary care to behavioral health services, but it was not doing as well in getting behavioral health patients connected to primary care.

**Sustained funding was crucial.** According to state officials and commercial payers, Medicare withdrawal from the demonstration in July 2014 would have been financially devastating for the Blueprint for Health. Such a shift would have affected commercial payers, CHTs, and SASH teams, with the latter possibly being discontinued entirely because of lack of funds. Medicare’s support has been a significant factor in the model’s success, and stakeholders were concerned about the potential of reversing that progress had Medicare ended its participation in 2014.

According to state officials, the proposed alternatives to the MAPCP Demonstration funding mechanism would not have sustained the Blueprint for Health model. The introduction of Medicare chronic care management fees (which began in January 2015) would not have been sufficient to support Vermont’s community network infrastructure. One state official suggested that chronic care management fees would “undo the multidisciplinary care support infrastructure and the community support infrastructure that this inexpensive investment has stimulated with \$1.50 PMPM CHT investment, \$4 PMPM SASH investment, and \$2 PMPM medical home investment—they have stimulated a geographic and cultural change that will go away.”<sup>1</sup>

**Robust data were needed, but difficult to produce.** Achieving the goals of the Blueprint for Health and the demonstration required leveraging even more data than was available to target resources to patients more effectively and to manage population health. Developing the health IT infrastructure to support initiatives like the Blueprint for Health took time, and Vermont’s initiative and health IT continued to undergo modification and evolution. For the vision of the Blueprint for Health to be truly operationalized, state leaders needed a strong skill set in project management, health care, and IT, so that health IT partners could focus on producing reliable data, rather than spending their time educating leaders on how a health IT system works.

## 5.2 Practice Transformation

This section seeks to answer evaluation research questions related to identifying the changes made by practices in Year Two, describing technical assistance available to practices,

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<sup>1</sup> These amounts are approximations rather than actual amounts paid. Under the MAPCP Demonstration, Medicare pays practices on a PMPM basis ranging from \$1.20 to \$2.39 depending on practices’ NCQA score, \$1.59 PMPM to the CHTs, and \$5.08 PMPM to the SASH program. See **Table 2-5** for more details.

summarizing views on the payment model, and describing experiences with the initiative in Year Two of the demonstration.

Participating practices in Vermont's Blueprint for Health initiative felt generally positive about implementation in Year Two. A practice administrator described the Blueprint for Health as the "spring board" that pulled together practices and community organizations that had worked separately toward a common goal. The Blueprint for Health was described by a provider as a model for how PCMHs should be practicing in the twenty-first century.

### **5.2.1 Changes Practices Made During Year Two**

**PCMH recognition and practice transformation.** Practices continued to make changes to their primary care delivery system related to NCQA PCMH recognition, care management processes, staffing, and health IT to participate in the Blueprint for Health.

The Blueprint for Health requires that participating practices obtain NCQA PCMH recognition. Early entrants in the Blueprint for Health qualified under NCQA's 2008 PPC® PCMH™ standards, while later entrants were required to qualify under the 2011 standards, which were perceived as being stricter. At the time of our site visit in 2013, many of the early adopters were in the process of recertifying under the 2011 standards. One provider we spoke with had just finished the recognition process for the first time and was most excited about the practice's new EHR. They also were beginning to implement and adhere to the meaningful use guidelines. Another provider, whose practice had just recertified, said that NCQA did a good job of setting a benchmark and providing practices with a set of standardized guidelines allow them to self-audit their practices. The NCQA recognition process still was considered a labor- and time-intensive task. One practice said that they would not have been able to obtain recognition without the Blueprint for Health support, most notably the CHTs.<sup>2</sup> Though recognition was a time and resource commitment, practices generally felt that the NCQA process standardized best practices and improved the overall quality of their PCMHs.

In Year Two, practices focused more on providing services for patients with substance abuse and mental health issues. One provider explained that the addition of a behavioral health counselor embedded in their CHT was a huge success. Practices and providers also became better at screening for depression and substance abuse. A pilot that tested the model of having psychiatrists go into practices was expanded to all practices within one large health group. The screening involved a five-question behavioral health questionnaire focused on depression, substance abuse, and alcohol abuse. A protocol and resources were put in place to handle cases when a patient screened positive. Though the behavioral health efforts increased in Year Two, there is still a great need for additional resources. CHT behavioral health staff members are only able to see patients six to eight times before they are forced to refer them to a long-term mental health specialist, although there is an extreme shortage of such resources.

In Year Two, practices improved processes to become more patient-centered. One provider said that they did previsit planning to help make patient visits more efficient. A "chart

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<sup>2</sup> As previously mentioned, funding was allocated for CHTs to work with practices 6 months before NCQA scoring to help meet the more stringent 2011 standards.

summary sheet” on the front page of the EHR reminded the provider if a patient was due for a procedure or if specific questions needed to be asked of the patient. The same practice also implemented a previsit form, which patients are asked to complete in the waiting room. The form starts with the question, “What is important for you to discuss with us today?” The respondent said that some providers appreciated the breadth of the question, but others wanted to ask only about the one most important thing because they did not feel they could address everything in a single visit. The practice was trying to get resistant providers on board by explaining that they did not have to address all issues at once, but instead could schedule a follow-up appointment to address other issues. The form also asked patients to review their medication list. The provider noted that the review of the medication list was the most helpful change the practice made to improve the accuracy of their medical records. Some practices also sent patients home with clinical summaries of the visit and documentation on next steps.

**Practice staffing changes.** Although staffing at the practices largely remained the same since our site visit in 2012, the CHTs added some new staff to their teams to support the Blueprint for Health practices and to close gaps in care. CHTs increased the number of dietitians, certified diabetic educators, social workers, wellness nurses, care coordinators, behavioral health professionals (psychologists, licensed alcohol and drug counselors, addiction nurses, and therapists), and panel managers.

One practice made significant staffing changes over the past year by hiring one clinical care associate (CCA) for each provider. The CCAs did a robust intake and prepared patients for their visit. They reviewed the EHR of patients with an upcoming visit to identify information that the provider might need to review before the visit (e.g., immunization status). The CCAs also did outreach with patients to ensure that they came in for needed tests. While the provider noted that the payments from the Blueprint for Health did not cover the salaries of the CCAs entirely, they hoped the extra staff would improve performance on quality indicators.

Greater emphasis was placed on having more time allocated for a social worker at practices, which was particularly important in the pediatric practice with which we spoke. A provider at this practice explained that their social worker engaged families and provided resources that met the needs of the whole family, not just the child. An employee at another practice commented that the CHT social worker embedded in their practice did a great job following up with patients and allowing the physicians and nurses to focus on their clinical duties. Yet another provider mentioned that the resources provided by the social worker provides were valuable, especially in helping elderly patients, and saved the other practice staff time.

As mentioned previously, there is an extreme shortage of psychiatric resources in Vermont. Mental health services are in very high demand in some locations, and we heard from multiple sources that there were not enough mental health professionals available to meet these needs. One CHT added two psychiatrists, one specializing in addiction; within 2 months, their schedules were full. One provider told us that they were close to finalizing a plan for a psychiatrist to spend a half-day per week in the practice, either consulting or seeing patients.

While pharmacists were not added to the practices or CHTs with which we spoke, one provider and a CHT leader voiced interest in having a pharmacist work in their practices. Prescription management was a big issue for patients taking multiple medications, and having

pharmacists on staff would help with drug reconciliation. The pharmacists also would act as a resource for the primary care physician by providing on-site prescription advisory services.

**Health information technology.** Since the 2012 site visit, some practices made significant changes in the ways they used health IT, specifically their EHRs, while others made only enhancements. One practice converted to a new EHR system in Year Two and described the process as “painful,” though necessary to meet meaningful use requirements. Another practice converted from paper records to an EHR. During Year Two, practices used their EHR systems to improve tracking of patient progress and population health management. Providers at two practices said they were using reports from their EHRs to identify women due for mammograms.

Other health IT tools were developed or enhanced in Year Two. One provider commented that focusing on building their registries strengthened their ability to report on certain conditions. Some practices adopted or planned to adopt patient portal platforms. One practice added My Health Online, a patient portal that allows patients to log on and make appointments, send doctors messages, refill prescriptions, and view medication lists and visit summaries. Another practice planned to adopt a patient portal in Year Three. One practice began using telemedicine, which allowed patients to visit the provider remotely on a screen, instead of physically being present in the office.

### **5.2.2 Technical Assistance**

Similar to our first site visit findings, practices and CHTs reported receiving a variety of technical assistance. Most mentioned that they received reports from various sources, including insurers and pharmaceutical companies. Perspectives varied on the usefulness of these reports. One provider said she received reports from insurance companies, but they came from the national level and she threw them away without looking at them because they were not accurate: “I don’t have time for that... When they become accurate, I’ll look at them.” Only one respondent (from a CHT) reported having seen the practice feedback reports produced by RTI for the MAPCP Demonstration. She reported using them and tried to engage practices in using them more, but was she was unsure how or if the practices used the reports in a meaningful way. None of the respondents from practices said that they had seen one of the practice feedback reports produced by RTI—although one said she would be interested.

New in 2013 were the practice profiles produced by the Blueprint for Health. Blueprint for Health staff conducted deeper analyses with Vermont Healthcare Claims Uniform Reporting and Evaluation System (VHCURES) data and shortened the lag in data availability from 1.5 years to 3 months. With these data, the Blueprint for Health staff developed practice profiles that included Medicaid and commercial payer data. Medicare data were added to these reports in October 2014. They produced different reports for the three insurance types and shared these reports with practices. Most practices said that they had not yet seen the practice profiles; one staff member reported that he had and spoke to its usefulness: “It gives us an idea of where we stand on things.”

Several practices mentioned working intensively with practice facilitators from EQuIP to meet NCQA PCMH recognition standards, which they found very useful. As one practice staff member said, “A facilitator met with us every 2 weeks for months to get this done. There is no

way a solo practitioner like myself could have done this without that support.” One respondent said he had never heard of the EQuIP program.

Two practices said that staff participated in training related to motivational interviewing, and another mentioned that someone from the University of Vermont was available, as needed, several times a year to speak on various topics, such as motivational interviewing or palliative care. Two providers mentioned the learning collaboratives. One participated in the asthma collaborative and planned to attend a care coordination collaborative, and found these programs useful. The other found them not very useful and costly for practices: “We can’t send three prescribers for four full days over the year. It isn’t realistic.”

Several practices participated in the sprint process to make DocSite work better for them. Most agreed that it was helpful, but noted that DocSite is still very labor intensive and takes a long time to complete. The sprint process changed to focus on EHR data quality. One CHT explained, “We are still calling them sprints, but now they are concentrating on making sure the [EHR] information is as clean as possible, so when it goes to the exchange or DocSite, the information in the [EHR] is set up so it can be shared. This will help ensure the data in the [EHR] is correct and useable as well.”

### **5.2.3 Payment Support**

In Year Two, funds from the Blueprint for Health were used mainly to support additional staff hired during the first year of the demonstration. CHTs used their PMPM funds to hire staff such as social workers, dietitians, and mental health professionals. One practice mentioned that CHT staff embedded in their office gave their practice a huge boost. Some practices used the funds to build their health IT infrastructure, while others pooled the money within their practices to support day-to-day operations.

Practice staff appreciated the funds, but, as in Year One, said that the money did not fully support the additional services they were expected to provide as PCMHs. One person commented that practices were expected to meet higher standards set forth by NCQA in 2011. The practices had to do significantly more work than when the Blueprint for Health began, with no increase in reimbursement. Providers felt it was unfair that the state did not increase the PMPM to compensate for the higher NCQA standards. One provider said that the PMPM payment did not influence his participation in the Blueprint for Health because the amount was very low. Instead, he participated because he felt the Blueprint for Health added value to his practice and that, rather than payments, would determine whether or not he continued.

Providers felt that the PMPM payments earmarked for the CHTs made the biggest impact on the demonstration. Practices were happy with how the CHTs operated, but felt they did not have the money to provide all the needed resources, such as additional short-term mental health care and medication reconciliation. One CHT leader explained that the payment ratio remained static since the beginning of the MAPCP Demonstration, but they give their staff raises each year and these costs were not taken into account in the PMPM structure.

## **5.2.4 Discussion of Practice Transformation**

Practices participating in the Blueprint for Health made improvements to their care management processes and health IT in Year Two, and they generally felt positive about how implementation progressed. Practices focused more on providing services and putting protocols in place for patients with substance abuse and mental health issues, using CHT staff provided through the Hub and Spoke initiative. While these efforts were helpful, there was still a great need for additional resources.

Practice staffing remained mostly the same since the first year of the demonstration, with the exception of one practice that added several CCAs. Staffing increased among the CHTs, however, with the addition of social workers, dietitians, and behavioral health professionals. Psychiatrists are still in high demand among the practices, and pharmacists were mentioned as another type of staff that would be a highly valued addition to the practices and CHTs.

Health IT evolved in Year Two. Some practices made significant changes, such as going from paper to electronic records, while others only adopted enhancements to their systems, for example, to their registries to improve their ability to report on certain conditions. Other forms of health IT, such as patient portals and the use of telemedicine, also took shape at some practices.

Technical assistance continued to be provided through the Blueprint for Health in the form of practice facilitators from EQuIP to help practices meet NCQA PCMH recognition standards, learning collaboratives and training, and the sprint process to help with using DocSite. Practices also received reports from commercial insurance companies and pharmaceutical companies and offered varying accounts of their usefulness. One new form of technical assistance introduced in Year Two was the practice profiles, produced by the Blueprint for Health using VHCURES data.

Similar to our findings for Year One, the payments from the Blueprint for Health were appreciated, but most practices agreed that the payments did not fully support the services expected of them to function as PCMHs. They saw most of the money going to the CHTs, which supported the practices. There are still major gaps in the services that the CHTs were able to provide to the practices because of funding limitations.

## **5.3 Quality of Care, Patient Safety, and Health Outcomes**

### **5.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

In Year Two, practices engaged in many activities focused on improving quality of care, reducing adverse events and medical errors, and improving patient health outcomes. Members of the CHTs and SASH program staff worked with practices on these activities.

Practices felt the Blueprint for Health facilitated considerably more quality improvement activities in Year Two. One practice staff member said, “What I love about the Blueprint is now we are proactive instead of reactive.” Another practice respondent talked about the Blueprint for Health encouraging a culture of change, with more focus on constant quality improvement. This

practice specifically noted improvements in their diabetes and depression care, which their patients appreciated. Other practices noted that the Blueprint for Health provided a framework for encouraging patients to do more self-management of their care, leading to better patient health outcomes. These practices also found more time to talk with their patients about health maintenance.

The majority of the practices described an environment in which doctors, other health care providers, and staff members worked together as a team, supporting each other and providing enhanced patient care. Many practices held weekly meetings to talk about areas for improvement within the practice, something that did not happen systematically during the first year of the MAPCP Demonstration. One practice instituted a quick meeting, or a “huddle,” between the primary care doctor and the CCA before each patient was seen to discuss the patient’s needs.

Following up with patients after discharge from the hospital to improve health outcomes was another area of focus for practices during Year Two. Practices scheduled visits for their patients to see their primary care providers as quickly as possible after hospital discharge to attempt to prevent readmissions.

The SASH wellness nurses were extremely busy and were providing similar services to those reported in Year One, such as medication reconciliation and establishing systems to help patients remember to take their medicine correctly. One SASH wellness nurse spoke of new staff training focused on patient overuse of sleeping pills, Benadryl, and sedatives. The SASH nurses also conducted risk assessments, and, because they were often in the homes of patients, they assessed in-home fall risks. Because these SASH nurses spent a considerable amount of time with their patients, they understood them and could often identify problems early, get patients needed care, and prevent a potential ER visit. One nurse cited poor diet as the biggest issue that had not improved in Year Two. She felt that the main reason for this lack of dietary improvement was patients’ lack of financial resources.

CHT staff also provided services similar to those in Year One. A CHT leader described making referrals to tobacco cessation programs and healthier living workshops and following up with and encouraging patients to schedule preventive care appointments if they were overdue.

Many providers described new patient screenings and using data from their EHRs to guide patient care. Three providers described screening for depression (e.g., using the Patient Health Questionnaires PHQ-2 and PHQ-9). Another provider discussed running reports from the practice’s EHR on hemoglobin (Hb) A1C and blood pressure levels to identify patients with higher than acceptable numbers. These patients were put on a monthly schedule, instead of a 3-month schedule, for seeing their primary care provider. This same practice used their EHR to identify women overdue for a pap smear and patients due for immunizations. Another practice created an internal quality improvement team that met once a week to discuss Blueprint for Health and NCQA quality measures, meaningful use guidelines, and ways to become more patient-centered.

### 5.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization measures. The results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in *Section 5.3.3*.

**Process of care measures.** *Table 5-4* reports covariate-adjusted differences in several process measures that indicate quality of care across MAPCP Demonstration and two comparison groups: PCMHs and non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures that address whether beneficiaries received all four of the recommended actions in diabetes care or none of the quality actions, respectively. The last indicator, whether or not a beneficiary received a total lipid panel, follows the care guidance for patients with ischemic vascular disease.

We examine the probability of receiving the recommended services. These dichotomous (i.e., yes or no) indicators are modeled using logistic regression models. Estimates in *Table 5-4* are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an increase in the likelihood. MAPCP Demonstration beneficiaries are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

**Table 5-4**  
**Vermont: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 8,585)	-4.34	[-10.98, 2.30]	-0.54	[-2.00, 0.91]
Year Two (N = 5,818)	-1.72	[-5.58, 2.14]	-1.39	[-3.18, 0.40]
Overall (N = 9,003)	-3.29	[-8.50, 1.93]	-0.88	[-2.24, 0.47]
Retinal eye examination				
Year One (N = 8,585)	0.10	[-2.17, 2.37]	-2.11*	[-3.84, -0.38]
Year Two (N = 5,818)	-4.49*	[-6.90, -2.09]	0.13	[-2.89, 3.15]
Overall (N = 9,003)	-1.74	[-3.60, 0.11]	-1.21	[-3.14, 0.71]
LDL-C screening				
Year One (N = 8,585)	-3.65*	[-7.18, -0.13]	-0.66	[-3.27, 1.95]
Year Two (N = 5,818)	-0.92	[-5.69, 3.85]	-0.71	[-3.43, 2.02]
Overall (N = 9,003)	-2.56	[-6.06, 0.94]	-0.68	[-3.08, 1.72]

(continued)

**Table 5-4 (continued)**  
**Vermont: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Medical attention for nephropathy				
Year One (N = 8,585)	-3.16	[-8.77, 2.46]	0.59	[-3.35, 4.53]
Year Two (N = 5,818)	0.39	[-5.58, 6.36]	0.08	[-3.49, 3.65]
Overall (N = 9,003)	-1.73	[-6.87, 3.40]	0.39	[-3.02, 3.79]
Received all 4 diabetes tests				
Year One (N = 8,585)	-2.88	[-7.26, 1.51]	0.10	[-2.32, 2.52]
Year Two (N = 5,818)	-2.98	[-6.56, 0.60]	-0.30	[-3.19, 2.59]
Overall (N = 9,003)	-2.92	[-6.44, 0.60]	-0.06	[-2.45, 2.32]
Received none of the 4 diabetes tests				
Year One (N = 8,585)	-0.71	[-1.93, 0.52]	0.23	[-0.45, 0.92]
Year Two (N = 5,818)	-1.45	[-3.97, 1.06]	0.33	[-0.42, 1.08]
Overall (N = 9,003)	-1.00	[-2.56, 0.55]	0.27	[-0.33, 0.88]
Total lipid panel				
Year One (N = 13,644)	-2.42	[-5.27, 0.44]	-2.09	[-4.54, 0.36]
Year Two (N = 10,013)	-2.70	[-6.02, 0.61]	-3.02*	[-6.05, 0.00]
Overall (N = 15,382)	-2.54	[-5.14, 0.07]	-2.48	[-5.02, 0.05]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend away from receiving a **retinal eye examination** among Blueprint for Health beneficiaries, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend away from receiving a **total lipid panel test** among Blueprint for Health beneficiaries, though at this time the *overall* estimate is not statistically significant.

**Preventable hospitalization measures.** Aside from studying processes of care, largely based on evidence-based guidelines, we also evaluated patient outcomes among MAPCP

Demonstration and comparison practices. Some patient medical events, such as those measured with Prevention Quality Indicators (PQIs), may be preventable with adequate access to high-quality primary care services. We defined avoidable catastrophic events as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, chronic obstructive pulmonary disease (COPD) or asthma in older adults, asthma in younger adults, hypertension, and congestive heart failure. The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 5-5** below reports covariate-adjusted differences in these patient outcome measures.

We examine differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters in **Table 5-5**. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improvements in the quality and access to ambulatory care, we expect MAPCP Demonstration beneficiaries to have a reduction (i.e., a significant negative value) in the rate of these avoidable hospitalizations.

**Table 5-5**  
**Vermont: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 50,292)	-0.56	[-1.63, 0.52]	-0.14	[-0.68, 0.40]
Year Two (N = 62,371)	0.80	[-1.39, 2.99]	0.27	[-0.34, 0.88]
Overall (N = 65,857)	0.20	[-1.29, 1.69]	0.09	[-0.33, 0.51]
PQI admissions—overall <sup>2</sup>				
Year One (N = 50,292)	0.89	[-0.87, 2.65]	1.76*	[0.76, 2.76]
Year Two (N = 62,371)	1.58	[-0.48, 3.65]	0.92*	[0.07, 1.77]
Overall (N = 65,857)	1.28	[-0.53, 3.09]	1.29*	[0.47, 2.11]
PQI admissions—acute <sup>3</sup>				
Year One (N = 50,292)	0.05	[-0.99, 1.09]	0.68*	[0.01, 1.35]
Year Two (N = 62,371)	0.79	[-0.03, 1.62]	0.37	[-0.20, 0.94]
Overall (N = 65,857)	0.47	[-0.22, 1.15]	0.51	[-0.03, 1.04]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 50,292)	0.88	[-0.70, 2.47]	1.07*	[0.31, 1.82]
Year Two (N = 62,371)	0.88	[-0.73, 2.48]	0.55	[-0.13, 1.23]
Overall (N = 65,857)	0.88	[-0.70, 2.45]	0.77*	[0.11, 1.44]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that Blueprint for Health is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among MAPCP Demonstration beneficiaries.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimates indicate that Blueprint for Health is associated with an increase in the rate of **overall PQI admissions** and **chronic PQI admissions** among MAPCP Demonstration beneficiaries. The lack of statistical significance in Year Two with respect to **chronic PQI admissions**, however, makes it uncertain whether this association will persist into Year Three.

### 5.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes

The metrics for the quantitative analyses discussed above relied on Medicare administrative claims data. For most of the process of care measures, there were no statistically significant findings when comparing Blueprint for Health practices to the comparison group. The statistically significant findings did not indicate an improvement in the quality of care for Blueprint for Health beneficiaries. In Year Two, the likelihood of having a retinal eye examination decreased relative to PCMH comparison practices, and the likelihood of receiving a total lipid panel decreased relative to non-PCMH comparison practices.

During the Year Two site visits, interviewees mentioned improvements in the quality of care. For example, the interviewees described improvement in self-management of care, teamwork among providers, follow-up after discharge, medication reconciliation, risk assessments, and use of EHRs. Other than one practice that mentioned a focus on diabetes patients, however, the aforementioned improvements in quality of care were not reflected in the analysis of process of care measures. In Year Two, the CHTs and SASH teams were just becoming fully integrated in the practices, which may explain why statistically significant improvements in quality of care have not been observed by Year Two. Also, in Year Two providers began to institute new patient screenings and to use EHR data to guide processes of care. It is hoped that that, by Year Three, practice changes adopted in Year Two will be fully integrated and that improvements in processes of care will be noted.

Unlike the process of care measures, there were several statistically significant estimates of the association between the MAPCP Demonstration and preventable hospitalizations. Unfortunately, they were not favorable associations. Blueprint for Health beneficiaries had a relative increase in PQI admissions (overall, acute, and chronic) in Year One relative to non-PCMH comparison practices. There may be a trend away from these unfavorable changes, however, so we will check to see if these unfavorable results remain absent in Year Three.

## 5.4 Access to Care and Coordination of Care

### 5.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two

In Year One of the demonstration, some practices expanded access to care by providing after-hours availability and same-day appointments; the effort continued during the second year

and expanded to more practices. New technological features, such as patient portals and telemedicine, as well as better coordination between health providers, also improved access to care and coordination of care.

In Year Two, several practices expanded their after-hours availability by offering 24/7 availability by phone and extended hours during weekdays and weekends. The availability of same-day appointments was another area in which practices made improvements. Practices not previously offering same-day appointments added this feature during Year Two.

Several practices also expanded access to care through online patient portals. One practice began using My Health Online, an online portal that allowed patients to request appointments, receive prescription refills, and view their medication lists. This portal also allowed patients to contact their provider directly with questions on a variety of topics. For example, patients could send blood pressure or blood sugar readings to the provider for feedback and advice. Providers appreciated this communication method because it allowed them to track their patients' health without having to schedule appointments. According to practice staff, patients enjoyed having the option to contact their provider directly at any point during the day and without having to leave their home.

Telemedicine was another new feature implemented by several practices to expand access, allowing patients to visit their provider remotely. One provider said that he dedicated one afternoon per week to type of patient visit.

In Year Two, coordination of care with CHTs, SASH program staff, and other health care facilities was a major focus for practices. Several practices mentioned more coordination with the CHTs, which gave both parties a greater understanding of patient needs. One practice described its increasing collaboration with the CHT social worker, which included weekly meetings to discuss patients, troubleshooting issues for patients, and determining next steps.

Interaction with the SASH program staff also increased in Year Two. All of the CHT leaders we interviewed reported positive and productive relationships with the SASH staff. When asked about collaboration and interaction with the SASH program staff, one CHT staff person commented, "It just keeps getting better and better." A typical method of interaction between CHTs and SASH program staff was regular meetings to discuss common patients and ensure services were not duplicated. CHTs and SASH program staff also used technology to coordinate care. One CHT leader discussed using ProviderLink, an electronic tool allowing practices to send referrals and share notes with CHT and SASH staff. The CHT and SASH staff responded to practices using this system. ProviderLink also allowed providers to create a patient record within the Link, so that patient information could be tracked. A SASH coordinator described another online system that allows SASH program staff to send notes to the patient's provider, along with blood pressure readings and other health information. This constant communication allowed all providers to collaborate and determine patients' service needs.

Access to psychiatric services was a focus during Year Two. One practice was part of a pilot that involved a psychiatrist rotating between several practices and providing services to patients. The rotation was on a set schedule, so each practice had a consistent time when the psychiatrist was available. A provider in one practice stated: "The psychiatrist pilot we had here

was huge, because psychiatry access is just so hard. We have a particularly challenging mental health population because we have a residency program, so I think we've been managing some psychiatric problems that we otherwise would have referred, so that has been nice."

Practices also changed how they communicated with other health providers, such as nursing homes and hospitals, to increase collaboration; this was associated with greater care coordination for each patient. For example, one practice stated that, in Year Two, they began to receive notifications when a patient was discharged from a hospital. After receiving this notice, the practice nurses followed up with the patient within a predetermined amount of time to schedule an in-person follow-up appointment.

#### **5.4.2 Changes in Access to Care and Coordination of Care**

Our evaluation of the MAPCP Demonstration and access to and coordination of care addresses whether the Blueprint for Health initiative was associated with changes in the utilization of primary care services and specialist services and with better or enhanced coordination of care for Medicare beneficiaries. **Table 5-6** below reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across Blueprint for Health practices and two comparison groups: PCMHs and non-PCMHs. Results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 5.4.3**.

The first four measures address utilization of primary care and specialist services. MAPCP Demonstration beneficiaries are expected to increase their utilization of primary care services and decrease utilization of specialist services relative to comparison group beneficiaries after the start of the MAPCP Demonstration. We looked at the quarterly rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall ambulatory visit rate, for example, if the MAPCP Demonstration is associated with reductions in both primary care and specialist visit rates, we also analyzed the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. A higher percentage indicates greater use of primary care services relative to specialist services. MAPCP Demonstration beneficiaries are expected to have higher primary care visit percentages.

We analyze two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. The Blueprint for Health is expected to increase the follow-up visit rate and reduce the unplanned readmission rate.

Finally, we assess continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plan. The value of the continuity of care index, which is measured annually, ranges

from zero to one. MAPCP Demonstration beneficiaries are expected to have higher values on the continuity of care index.

With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in fifth quintile and less likely to be in the first quintile.

These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile.

**Table 5-6**  
**Vermont: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health Practices vs. CG PCMHs		Blueprint for Health Practices vs. CG non-PCMHs	
	Average estimate	90% Confidence interval	Average estimate	90% Confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 50,292)	-60.98	[-123.37, 1.40]	-21.68	[-77.57, 34.21]
Year Two (N = 62,371)	-52.82	[-112.43, 6.79]	-19.56	[-81.01, 41.89]
Overall (N = 65,857)	-56.42	[-115.40, 2.56]	-20.49	[-78.53, 37.55]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 50,292)	-0.45	[-31.28, 30.38]	-44.24*	[-70.24, -18.23]
Year Two (N = 62,371)	1.95	[-33.94, 37.85]	-36.99*	[-68.42, -5.56]
Overall (N = 65,857)	0.89	[-31.50, 33.28]	-40.18*	[-67.56, -12.80]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 50,292)	-4.96	[-13.99, 4.06]	-2.99	[-12.54, 6.57]
Year Two (N = 62,371)	-17.49*	[-27.96, -7.02]	-19.91*	[-37.22, -2.60]
Overall (N = 65,857)	-11.97*	[-20.78, -3.16]	-12.45	[-25.02, 0.11]
Primary care visits as percent of total visits (higher quintile = larger percentage)				
Year One (N = 37,441)				
1st quintile	3.40	[-0.09, 6.89]	-1.90	[-5.86, 2.05]
5th quintile	-1.55	[-3.25, 0.16]	0.90	[-1.01, 2.82]
Year Two (N = 29,453)				
1st quintile	1.77	[-1.71, 5.26]	-2.86	[-6.46, 0.74]
5th quintile	-0.78	[-2.34, 0.79]	1.34	[-0.39, 3.07]
Overall (N = 42,653)				
1st quintile	2.71	[-0.60, 6.02]	-2.31	[-6.03, 1.41]
5th quintile	-1.22	[-2.78, 0.34]	1.09	[-0.71, 2.89]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 5,316)	41.56*	[1.19, 81.94]	9.88	[-24.38, 44.13]
Year Two (N = 6,496)	30.29	[-13.56, 74.14]	-21.41	[-55.95, 13.14]
Overall (N = 10,513)	35.34	[-3.00, 73.67]	-7.40	[-37.40, 22.60]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 6,731)	-15.29	[-44.74, 14.17]	1.06	[-18.21, 20.32]
Year Two (N = 8,266)	-12.40	[-33.08, 8.28]	-4.36	[-19.37, 10.65]
Overall (N = 13,097)	-13.69	[-33.13, 5.75]	-1.94	[-17.02, 13.14]

(continued)

**Table 5-6 (continued)**  
**Vermont: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health Practices vs. CG PCMHs		Blueprint for Health Practices vs. CG non-PCMHs	
	Average estimate	90% Confidence interval	Average estimate	90% Confidence interval
Continuity of care index (higher quintile = better continuity of care)				
Year One (N = 55,659)				
1st quintile	-1.08	[-2.87, 0.70]	-2.65*	[-4.24, -1.05]
5th quintile	0.60	[-0.36, 1.56]	1.43*	[0.59, 2.26]
Year Two (N = 45,164)				
1st quintile	-1.45	[-3.90, 1.01]	-5.13*	[-7.50, -2.77]
5th quintile	0.82	[-0.52, 2.16]	2.67*	[1.54, 3.80]
Overall (N = 59,360)				
1st quintile	-1.24	[-3.04, 0.56]	-3.72*	[-5.53, -1.91]
5th quintile	0.69	[-0.28, 1.67]	1.96*	[1.06, 2.87]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with a decrease in the rate of **medical specialist visits** among MAPCP Demonstration beneficiaries by 40.18 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with a decrease in

the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries by 11.97 per 1,000 beneficiary quarters.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend toward decreasing the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in continuity of care, as measured by concentration of visits. Specifically, Blueprint for Health is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH provider, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH provider and referred providers.

### **5.4.3 Discussion of Access to Care and Coordination of Care**

Despite learning during the site visit interviews that Blueprint for Health practices had attempted to increase access to primary care by offering extended hours during the week and weekends and same-day appointments, the quantitative analysis does not find any significant changes in the rate of primary care visits by Blueprint for Health beneficiaries. Rather the coefficients are negative, but statistically insignificant. This may have been due to other efforts implemented by the Blueprint for Health to increase access. Patient portals that allow patients to ask physicians questions remotely, telemedicine, and 24/7 telephone availability possibly reduced patients' needs for primary care office visits. There is a decrease in medical specialist visits, however, and a negative trend emerging in surgical specialist visits relative to non-PCMH comparison practices.

The outcomes analysis supports the increased efforts noted by interviewees to increase coordination of care through means such as practice interactions with CHTs and SASH, Provider Link, and notifications of patients' discharge from hospitals. We found increases in the continuity of care scores, a positive outcome that hints at better access to and coordination of care.

## **5.5 Beneficiary Experience with Care**

### **5.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

Some features expected to improve beneficiary experience with care, such as improved access to care, coordination of care, and quality of care, were described in previous sections. This section focuses specifically on features intended to improve patient engagement and self-management.

One of the Blueprint for Health’s strategies to support patients in managing their own health is to offer Healthier Living Workshops. These began in Year One and continued in Year Two. During the first three quarters of 2013, 32 Healthier Living Workshops were conducted, and a total of 299 patients completed the workshops (see *Table 5-7*), according to Vermont’s quarterly reports to CMS.

**Table 5-7**  
**Healthier Living Workshops offered during the first three quarters of 2013**

Workshop topics	Number of workshops	Number of participants
Chronic Disease Self-Management	12	160
Diabetes	7	70
Pain	10	44
Wellness Recovery Action Plan	3	25
Total	32	299

Some respondents noted that their patients participated in groups focused on weight loss or tobacco cessation. Most providers said that they referred patients to the Healthier Living Workshops, but their assessments of the workshops were mixed. Providers at a pediatric practice noted that the topics were not very relevant for their patients. Although they were told that they could develop their own workshops, they felt that would entail a lot of additional work. Another provider said that they did not use the workshops because they were scheduled only during the day, to avoid paying staff overtime, and daytime hours were not feasible for their patients. One provider thought that the groups worked better when they focused on a specific condition. For example, he felt that a diabetes group was successful, but that a general self-management group did not work as well because the participants did not have enough in common.

Shared decision making and motivational interviewing were other strategies used by practices to enhance patient engagement. At the time of the Year One site visit, shared decision making training was underway, but not widespread. One year later, although all respondents from practices felt that they were moving in the direction of increased patient engagement and input, some were either not clear about what exactly shared decision making was or not convinced that shared decision making was a useful strategy. One provider commented that getting patients motivated and engaged had been part of his work for 40 years, and he did not think that the concept of shared decision making added value to the work he had always done. The same provider noted that shared decision making worked well for some patients (typically those with higher education levels), but not as well with others. Several respondents mentioned motivational interviewing as a means to increasing patient engagement, and some said that providers participated in motivational interviewing training. They noted, however, that it was a difficult skill to teach, and that some seemed to “have it in their soul,” but others did not. As one respondent said, “Some physicians like to tell, and others like to ask.” Nonetheless, this respondent said that providers in their practice had come a long way toward patient-centered care and asking more open-ended questions.

Two providers said that putting a self-management plan and goals in writing helped patients commit to the plan. According to one, “I know that physicians have always encouraged their patients, but to have to document it makes the patient more aware of it, and it is like they

have committed to it.” They believed that the focus on self-management led to increased patient satisfaction and improved outcomes. As one said, “The bulk of why families like to come to our practice and why kids get better is because they are engaged in the process of caring for themselves.”

Several practices involved patients in practice improvement activities in Year Two. One conducted focus groups with patients and noted that the feedback was very useful. Three mentioned conducting patient satisfaction surveys; one practice added a mental health component to their practice after reviewing their Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey results. A pediatrician noted that they chose to develop their own patient satisfaction survey, rather than take part in the CAHPS survey, because the content was not appropriate for their patient population.

### **5.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between the Blueprint for Health and changes in beneficiary experience with care are not yet available. In the Final Report, we plan to report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

## **5.6 Effectiveness (Utilization & Expenditures)**

### **5.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures During Year Two**

Vermont specified in their MAPCP Demonstration application that they expect significant reductions in inpatient and ER utilization. The state also expects reductions in the costs of nursing home and mental health services. Vermont believes that it was possible to attain a 5 to 10 percent cumulative reduction in the number of Medicare beneficiaries receiving hospital-based care for ambulatory care sensitive conditions (ACSCs) and the number of beneficiaries readmitted for hospital-based care for their ACSCs. The state also expects a 5 to 10 percent reduction in the number of users and services for advanced imaging, major orthopedic procedures (fractures, knee replacements, and hip replacements), ambulance, nursing home, skilled nursing facilities, long-term care, and rehabilitation, as well as inpatient utilization related to musculoskeletal conditions and injuries. Vermont forecast an increase of 1 percent for outpatient services and pharmacy and a 10 percent increase in laboratory and home-based care services. These reductions and increases are predicted to achieve Medicare budget neutrality for the Blueprint for Health. Vermont expects Medicare gross savings of \$51,454,051 (\$28,473,051 net of payments to practices) over the 3-year demonstration period.

In Year Two, the Blueprint for Health focused on achieving these reductions by giving patients greater access to consistent and well-coordinated care in a more cost-effective setting. Mental health services, a particular focus for Year Two, were expanded through the CHTs and the Hub and Spoke initiative. With the help of the CHTs, practices began to track ER usage and readmission rates more closely. Practices also began to strengthen their transitions of care support and planned to continue developing this aspect of their practices in Year Three. CHTs played an important role in efforts to reduce hospital-based services by following up with recently discharged patients to avoid readmission.

Building on the efforts started at the beginning of the demonstration, practices continued to monitor and work closely with patients with chronic conditions to reduce preventable ER visits and hospitalizations for ACSCs. A representative from one Council on Aging said that health care providers worked more closely with the elderly population with diabetes, congestive heart failure, COPD, asthma, and other chronic diseases. The SASH program combines care coordination and chronic disease management services in a congregate housing setting. A SASH coordinator explained that their program built trust between SASH staff and SASH participants. They believed that, in this more intimate and personalized environment, patients' health would improve as a result of constant communication with health professionals and continuous in-home monitoring by SASH staff. Interviewees generally believed that by continuing to focus on these chronic conditions, the state might be able to bend the cost curve and lower utilization.

Practices did not mention services targeted toward lowering expenditures for major orthopedic procedures or inpatient services for musculoskeletal conditions and injuries. CHTs and SASH panels offered fall prevention classes, however, and SASH staff performed in-home assessments to identify potentially dangerous living situations to lower fall risks. Advanced imaging costs were expected to decrease in step with fewer falls.

One solo practitioner said that his practice struggled to lower costs and ER utilization significantly. Because he was the sole physician, he was unable to provide the extended or weekend office hours that larger practices offered. Furthermore, there was no urgent care center in his area, so patients had no alternative to higher-cost ER services.

A new measure created by the Blueprint for Health in Year Two tracks the Total Relative Resource Use Index (RUI). The RUI is based on software developed by HealthPartners as part of their Total Cost of Care (TCOC) measurement system. The Blueprint for Health calculates RUIs for each practice and reports the measure in their Blueprint for Health practice profiles. The Blueprint for Health expects that practices' RUIs will improve as a result of the initiative.

### 5.6.2 Changes in Utilization and Expenditures

**Tables 5-8** and **5-9** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between the Blueprint for Health and two comparison groups: PCMHs and non-PCMHs. **Table 5-8** contains measures of total expenditures, as well as specific categories of expenditures expected to be affected by the implementation of the Blueprint for Health. Estimates in this table are interpreted as the difference in the rate of growth in per beneficiary per month (PBPM) expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. The Blueprint for Health is expected to reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether the Blueprint for Health is associated with the intended utilization changes in these care categories, we observe acute-care, post-acute-care, ER, specialty physician, and imaging expenditures.

We also analyze the changes in all-cause admissions and ER visits not leading to hospitalization measured as rates per 1,000 beneficiary quarters. **Table 5-9** shows the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value

corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.

The Blueprint for Health is also expected to result in higher utilization of certain types of services. In particular, we expect that the demonstration will increase the utilization of primary care, home-based care, and outpatient services (includes care received at hospital outpatient departments, FQHCs, and RHCs). These services are captured in our measures of primary care physician expenditures, home health expenditures, and outpatient expenditures. Positive regression coefficients indicate that the Blueprint for Health is associated with the expected increase in use of these services.

As described above, the Blueprint for Health is expected to decrease the use of some services, while increasing the use of others. Overall the MAPCP Demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyze the average overall Medicare PBPM expenditures and look for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 5.6.4**.

**Table 5-8**  
**Vermont: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 50,292)	-30.93	[-71.26, 9.41]	-52.65*	[-79.69, -25.61]
Year Two (N = 62,371)	-31.36	[-72.70, 9.99]	-75.36*	[-100.49, -50.23]
Overall (N = 65,857)	-31.17	[-66.09, 3.75]	-65.35*	[-88.37, -42.32]
Acute-care				
Year One (N = 50,292)	3.86	[-15.41, 23.13]	-18.05	[-38.45, 2.34]
Year Two (N = 62,371)	-3.44	[-20.91, 14.04]	-23.47*	[-40.77, -6.17]
Overall (N = 65,857)	-0.22	[-14.82, 14.38]	-21.08*	[-37.81, -4.36]
Post-acute-care				
Year One (N = 50,292)	-23.34*	[-35.88, -10.81]	-19.26*	[-28.85, -9.67]
Year Two (N = 62,371)	-15.68*	[-30.34, -1.02]	-20.87*	[-32.25, -9.49]
Overall (N = 65,857)	-19.06*	[-29.53, -8.58]	-20.16*	[-29.96, -10.36]
ER				
Year One (N = 50,292)	2.60*	[0.39, 4.81]	-2.15*	[-4.18, -0.11]
Year Two (N = 62,371)	3.12*	[0.79, 5.45]	-5.28*	[-8.11, -2.46]
Overall (N = 65,857)	2.89*	[0.79, 4.99]	-3.90*	[-6.19, -1.61]
Outpatient				
Year One (N = 50,292)	16.88*	[10.16, 23.60]	0.20	[-9.47, 9.87]
Year Two (N = 62,371)	15.37*	[8.55, 22.20]	-6.55	[-14.51, 1.41]
Overall (N = 65,857)	16.04*	[10.19, 21.88]	-3.58	[-11.75, 4.60]

(continued)

**Table 5-8 (continued)**  
**Vermont: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Specialty physician				
Year One (N = 50,292)	-3.65*	[-5.86, -1.43]	-4.10*	[-6.74, -1.45]
Year Two (N = 62,371)	-6.74*	[-9.63, -3.84]	-4.84*	[-7.03, -2.66]
Overall (N = 65,857)	-5.38*	[-7.61, -3.15]	-4.51*	[-6.38, -2.65]
Primary care physician				
Year One (N = 50,292)	-5.08*	[-7.31, -2.85]	-2.66*	[-4.36, -0.95]
Year Two (N = 62,371)	-3.85*	[-6.60, -1.10]	-2.63*	[-4.59, -0.68]
Overall (N = 65,857)	-4.39*	[-6.85, -1.94]	-2.64*	[-4.40, -0.88]
Home health				
Year One (N = 50,292)	-5.42*	[-10.17, -0.67]	2.43	[-0.54, 5.40]
Year Two (N = 62,371)	-6.74*	[-12.60, -0.88]	1.24	[-1.74, 4.23]
Overall (N = 65,857)	-6.16*	[-11.28, -1.03]	1.77	[-0.97, 4.51]
Other non-facility				
Year One (N = 50,292)	-2.07*	[-3.62, -0.53]	-2.08	[-5.10, 0.95]
Year Two (N = 62,371)	-1.77	[-3.96, 0.41]	-2.81*	[-5.00, -0.61]
Overall (N = 65,857)	-1.90*	[-3.71, -0.10]	-2.49*	[-4.90, -0.08]
Laboratory				
Year One (N = 50,292)	-1.24*	[-2.20, -0.28]	-1.18*	[-1.90, -0.47]
Year Two (N = 62,371)	-1.02	[-2.08, 0.04]	-1.15*	[-1.83, -0.48]
Overall (N = 65,857)	-1.12*	[-2.10, -0.13]	-1.17*	[-1.79, -0.54]
Imaging				
Year One (N = 50,292)	-2.06*	[-2.75, -1.38]	-1.28*	[-1.69, -0.87]
Year Two (N = 62,371)	-0.81	[-1.73, 0.10]	-1.15*	[-1.56, -0.74]
Overall (N = 65,857)	-1.36*	[-2.11, -0.62]	-1.21*	[-1.58, -0.83]

(continued)

**Table 5-8 (continued)**  
**Vermont: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Other facility				
Year One (N = 50,292)	-0.08	[-0.31, 0.15]	0.53	[-0.83, 1.89]
Year Two (N = 62,371)	-0.51	[-1.15, 0.12]	1.03	[-0.32, 2.39]
Overall (N = 65,857)	-0.32	[-0.66, 0.01]	0.81	[-0.44, 2.06]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There is no statistically significant difference in the *overall* growth of **total Medicare expenditures** among beneficiaries in Blueprint for Health practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **total Medicare expenditures** is \$65.35 slower among beneficiaries in Blueprint for Health practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **acute-care expenditures** is \$21.08 slower among beneficiaries in Blueprint for Health practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **post-acute-care expenditures** is \$19.06 slower among beneficiaries in Blueprint for Health practices relative to beneficiaries in PCMH practices. The *overall* growth in **post-acute-care expenditures** is \$20.16 slower among beneficiaries in Blueprint for Health practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **expenditures for ER visits not leading to hospitalization** is \$2.89 faster among beneficiaries in Blueprint for Health practices relative to beneficiaries in PCMH practices. The *overall* growth in **expenditures for ER visits**

**not leading to hospitalization** is \$3.90 slower among beneficiaries in Blueprint for Health practices relative to beneficiaries in non-PCMH practices.

- The *overall* growth in **outpatient (including FQHCs) expenditures** is faster among beneficiaries in Blueprint for Health practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **expenditures for specialty physicians and primary care physicians** is slower among beneficiaries in Blueprint for Health practices relative to both beneficiaries in PCMH and non-PCMH practices.
- The *overall* growth in **home health expenditures** is slower among beneficiaries in Blueprint for Health practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **laboratory, imaging, and other non-facility expenditures** is slower relative to beneficiaries in PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether these associations will persist into Year Three.
- The *overall* growth in **laboratory, imaging, and other non-facility expenditures** is slower relative to beneficiaries in non-PCMH practices.

**Table 5-9**  
**Vermont: Comparison of average change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 50,292)	-1.26	[-5.39, 2.87]	1.61	[-0.65, 3.87]
Year Two (N = 62,371)	1.90	[-3.62, 7.43]	0.21	[-2.30, 2.71]
Overall (N = 65,857)	0.51	[-3.97, 4.99]	0.82	[-1.22, 2.87]
ER visits not leading to hospitalization				
Year One (N = 50,292)	16.12*	[5.49, 26.76]	13.17*	[4.60, 21.73]
Year Two (N = 62,371)	15.42*	[4.46, 26.38]	8.24	[-1.02, 17.50]
Overall (N = 65,857)	15.73*	[5.23, 26.23]	10.41*	[1.93, 18.89]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **ER visits not leading to a hospitalizations** among MAPCP Demonstration beneficiaries by 15.73 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **ER visits not leading to a hospitalizations** among MAPCP Demonstration beneficiaries by 10.41 per 1,000 beneficiary quarters. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

### 5.6.3 Medicare Budget Neutrality in Year Two of the Blueprint for Health

#### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention absent any fees paid on behalf of Medicare. Estimates of gross savings for Vermont through Year Two of the demonstration are based on the sum of eight quarter-specific MAPCP Demonstration cost regression coefficients comparing beneficiaries attributed to MAPCP Demonstration practices to beneficiaries attributed to PCMH comparison practices. Negative cost estimates denote savings, as the growth in MAPCP Demonstration costs was smaller than in the comparison group. Positive cost estimates denote losses, as the growth in MAPCP Demonstration costs exceeded that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares with the beneficiary-quarter as the unit of analysis.

#### MAPCP Demonstration Fees

In the MAPCP Demonstration, CMS is paying monthly medical home fees to Blueprint for Health practices for Medicare-assigned demonstration beneficiaries. Total monthly fees paid by Medicare are aggregated to the quarter level from claims submitted on behalf of the practices and other participating organizations. Budget neutrality, or net savings, is determined on a yearly (or multiple-year) basis by subtracting all paid fees during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality are slightly lower than the actual fees paid, because the savings regression model excludes beneficiaries who were eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees are also calculated excluding beneficiaries with fewer than 3 months of demonstration eligibility.

#### Statistical Tests of Budget Neutrality

This regression methodology allows for statistical tests of confidence that CMS and the states can place in any estimated savings. Three tests are conducted in the analysis.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration associated with a lower level of costs in one or more demonstration quarters during the first 2 years?*
2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower MAPCP Demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings must be positive, implying systematically lower MAPCP Demonstration expenditures relative to the PCMH comparison group and controlling for beneficiary and practice characteristics.

3. The third test requires that total gross savings exceeds total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid out?*

### **Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures**

In addition to the statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration into perspective. The first measure is the return on investment (RoI) of fees, the ratio of total gross savings to total fees paid by the MAPCP Demonstration. RoI answers the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implies budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among MAPCP Demonstration beneficiaries in the *absence* of the demonstration. This unobservable occurrence is estimated by taking average Medicare expenditures observed in the comparison group and multiplying them by the number of MAPCP Demonstration beneficiaries. Viewing the total gross savings in context of this number answers the question: What was Medicare's savings as a percentage of all expenditures? Since both of these ratios are based on total gross savings, a statistically significant estimate of total gross savings is necessary to ensure confidence in their validity.

**Tables 5-10a–c** report the estimated gross and net savings for Vermont during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 5-10a**  
**Vermont: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2011: Q3 (Jul–Sept)	2011: Q4 (Oct–Dec)	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	
Difference in quarterly expenditures per beneficiary (A)	-\$120.67*	-\$71.74	-\$104.37	-\$76.04	-\$92.78
Eligible beneficiary quarters (B)	38,132	38,012	45,138	47,028	168,310
Total gross savings (C = -A*B)	\$4,601,536	\$2,726,903	\$4,711,134	\$3,576,208	\$15,615,781
Total MAPCP Demonstration fees (D)	\$647,708	\$734,277	\$847,342	\$893,726	\$3,123,054
Net savings (E = C-D)	\$3,953,828	\$1,992,626	\$3,863,792	\$2,682,482	\$12,492,728
Average expenditures (PCMH CG) (F)	\$2,045	\$2,275	\$2,210	\$2,327	\$2,220
Total expenditures (PCMH CG) (G = F*B)	\$77,979,940	\$86,477,300	\$99,754,980	\$109,434,156	\$373,646,376
Average expenditures (MAPCP Demonstration) (H)	\$1,937	\$2,145	\$2,154	\$2,245	\$2,128

(continued)

**Table 5-10a (continued)**  
**Vermont: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2011: Q3 (Jul–Sept)	2011: Q4 (Oct–Dec)	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	
Total expenditures (MAPCP Demonstration) (I = H*B)	\$73,861,684	\$81,535,740	\$97,227,252	\$105,577,860	\$358,202,536

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 5-10b**  
**Vermont: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	
Difference in quarterly expenditures per beneficiary (A)	-\$40.09	-\$99.58	-\$159.74*	-\$73.74	-\$94.07
Eligible beneficiary quarters (B)	50,058	52,338	54,321	56,786	213,504
Total gross savings (C = -A*B)	\$2,006,822	\$5,211,835	\$8,677,114	\$4,187,602	\$20,083,374

(continued)

**Table 5-10b (continued)**  
**Vermont: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	
Total MAPCP Demonstration fees (D)	\$1,012,967	\$1,635,842	\$1,408,529	\$1,423,436	\$5,480,774
Net savings (E = C-D)	\$993,856	\$3,575,993	\$7,268,585	\$2,764,166	\$14,602,600
Average expenditures (PCMH CG) (F)	\$2,179	\$2,294	\$2,316	\$2,243	\$2,259
Total expenditures (PCMH CG) (G = F*B)	\$109,076,382	\$120,063,372	\$125,807,436	\$127,370,998	\$482,318,188
Average expenditures (MAPCP Demonstration) (H)	\$2,139	\$2,193	\$2,112	\$2,174	\$2,155
Total expenditures (MAPCP Demonstration) (I = H*B)	\$107,074,062	\$114,777,234	\$114,725,952	\$123,452,764	\$460,030,012

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees, excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 5-10c**  
**Vermont: Estimates of gross savings, fees paid, and net savings, all years**

	Year One and Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	-\$93.50	-\$198.26	\$11.26
Eligible beneficiary quarters (B)	381,814	—	—
Eligible beneficiaries overall	65,857	—	—
Total gross savings (C = -A*B)	\$35,699,155	-\$4,301,046	\$75,699,356
Total MAPCP Demonstration fees (D)	8,603,828	—	—
Net savings (E = C-D)	\$27,095,327	-\$12,904,874	\$67,095,528
Average expenditures (PCMH CG) (F)	\$2,242	—	—
Total expenditures (PCMH CG) (G = F*B)	\$855,964,564	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,143	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$818,232,548	—	—
Return on fees (J = C/D)	4.15	—	—
Gross savings per comparison expenditures (K = C/G)	0.042	—	—

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A\*B): Weighted average of the quarterly difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (comp) (F\*B): Average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(J) Return on fees (J = C/D): Total gross savings divided by total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2011:Q3–2013:Q2.

- Estimated differences in Blueprint for Health costs per beneficiary, relative to the comparison group, range from a negative \$159.74 (2013: Quarter 1) to a negative \$40.09 (2012: Quarter 3) [**Tables 5-10a–b**]. While estimates in all eight quarters are negative, they are statistically significant in only the first (2011: Quarter 3) and seventh quarters (2013: Quarter 1).
- Estimated total gross savings to Medicare is a positive \$35,699,155 [**Table 5-10c: C**], but this is not statistically significant. The confidence interval (2-sided; 90 percent level) ranges between \$4.3 million in losses to \$75.7 million in savings. Net savings are estimated at \$27,095,327, but similarly are not statistically significant.
- The \$35.7 million savings estimate is almost 4.2 percent of the estimated \$855 million in comparison group costs weighted by Blueprint for Health eligible beneficiaries [**Table 5-10c: K**]. The width of the confidence interval for total gross savings, however, indicates that the gross savings rate to date cannot be considered statistically different from zero.
- Total fees paid out based on Blueprint for Health eligible quarters are \$8,603,828 [**Table 5-10c: D**], or \$7.51 per eligible month.<sup>3</sup> The fees average about 1.1 percent of total Medicare expenditures for health services by Blueprint for Health eligible beneficiaries during the demonstration’s first 2 years [**Table 5-10c: I**].
- This translates into a positive Medicare return on investment of fees of 4.15 (\$35,699,155/\$8,603,828) [**Table 5-10c: J**], though the confidence interval around the total gross savings estimate does not indicate statistical significance.

#### 5.6.4 Discussion of Effectiveness

In its MAPCP Demonstration application to CMS, Vermont described how it expected to decrease overall expenditures of Medicare Blueprint for Health beneficiaries. They planned for significant reductions in inpatient and ER utilization and the costs of nursing home and mental health services, while expecting increases in expenditures on outpatient, pharmaceutical, laboratory, and home-based care services. None of the interviewees mentioned that these goals were achieved by the end of the second year of the demonstration. There was statistically significant evidence, however, that Vermont had achieved some of its goals—mainly slower growth in total Medicare expenditures. As Vermont projected in its application, this was driven by slower growth in expenditures on acute-care, post-acute-care, ER services, specialty physician services, and imaging services. They also saw slower growth in expenditures on primary care visits and laboratory services. The unexpected decrease in primary care physician expenditures likely was driven by the availability of alternative methods for contacting Blueprint for Health practices, such as 24/7 telephone availability, patient portals, and telemedicine.

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<sup>3</sup> Fees per eligible month equaled the total fees divided by MAPCP Demonstration eligible months. Eligible months equaled eligible quarters multiplied by 3.

The decrease in ER expenditures was accompanied by a statistically significant increase in the rate of all ER visits. Beneficiaries from the focus group noted that they were being informed of their chronic conditions and encouraged to take more control over their own health, but often were not being educated about when it was appropriate to seek care in an ER instead of from their primary care physician. This approach also may have created a hyperawareness of their own health that was associated with beneficiaries seeking care in the ER more frequently, but for less severe conditions or symptoms (thus increasing the rate of ER visits and decreasing ER expenditures).

While the \$36 million in estimated MAPCP Demonstration gross savings in Vermont was not statistically significant, the savings should be considered in the context of the very low percentage investment that CMS made in the state (about 1 percent of Medicare expenditures on services to all Part A and Part B providers). It is possible that savings would have been disproportionately larger with a larger monthly investment in participating medical homes.

## **5.7 Special Populations**

### **5.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

In Year Two, Vermont continued initiatives focused on four subpopulations within the state, including

- Medicaid beneficiaries with one or more chronic conditions, through VCCI;
- Individuals (other than Medicaid beneficiaries) with chronic conditions, multiple comorbidities, or at high-risk for developing a chronic condition;
- Individuals with behavioral health issues, through the Hub and Spoke initiative; and
- Medicare beneficiaries in supported housing, through the SASH program.

Based on the site visit interviews, no changes to the VCCI program were identified in Year Two. Medicaid care coordinators continue to provide and coordinate services for Medicaid beneficiaries with chronic conditions. Similarly, no changes were mentioned regarding interventions for individuals (other than Medicaid beneficiaries) with chronic conditions. As described earlier in this chapter, the Hub and Spoke initiative was implemented in Year Two to address the needs of individuals with behavioral health issues and opioid addictions.

The SASH program was the initiative that changed the most in Year Two, increasing the number of total program participants by 40 percent from the same time in Year One. There was also a notable increase in referrals from providers and family members compared to Year One, as word spread about the program. Most, if not all, of the practices we interviewed during our Year Two site visit were aware of the SASH program, an improvement from our Year One findings. State officials attempted to double SASH enrollment in Year Two; expansion slowed, however, because of uncertainty about continued funding from the MAPCP Demonstration (now scheduled to end December 31, 2016).

Several challenges faced by the SASH program were mentioned during our site visit. The resources allocated for SASH wellness nurses, 0.25 full-time equivalent (FTE) per SASH panel, is particularly problematic. All respondents agreed that this was not sufficient to meet the needs of SASH participants, especially in the rural areas of the state, where nurses have to drive 45 minutes to an hour or more each way to meet with participants. One solution proposed to address this issue is to reduce the panel size in rural areas to 80 instead of 100, allowing nurses to focus on fewer participants.

Similar to our findings in Year One, a general lack of understanding of the SASH program's value as a community resource for health providers remained a problem. SASH program staff reported difficulty in explaining to state officials and state contractors involved with health IT initiatives the benefit of integrating SASH with the VHIE, which went live in January 2014. Lacking access to accurate and up-to-date health data on SASH participants would have greatly interfered with the care and services provided by the SASH program. The SASH program eventually was granted access to the VHIE after further discussions with the state.

SASH program staff continued to use DocSite for panel management and generating reports. One SASH staff person commented, "I love DocSite because of its potential." In Year Two, SASH participants were asked to sign a consent form as part of the "patient consent to view" policy for access to patients' integrated health records in DocSite, which enables SASH staff to view their health care data. Though some resistance was anticipated, SASH participants were reported to have signed the consent forms with little opposition.

### **5.7.2 Changes Experienced by Special Populations**

In all states, we provide quantitative analysis of the association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries. These special populations include beneficiaries with specific conditions leading to higher utilization of health care (multiple chronic conditions, behavioral health conditions, or disabilities) or those who experience disparities in health care (beneficiaries who are dually eligible for Medicare and Medicaid, live in rural areas, or belong to racial and ethnic minorities). Specific to Vermont, we also examine the association between the MAPCP Demonstration and the SASH population separately.

**Table 5-11** below reports covariate-adjusted differences in total Medicare spending PBPM across MAPCP Demonstration beneficiaries and two comparison groups—PCMHs and non-PCMHs—for the above special populations in Vermont. The next five tables, **Tables 5-12** through **5-16**, show the changes associated with the MAPCP Demonstration for beneficiaries with multiple chronic conditions. Care management might be expected to have a greater impact on the outcomes for this population than for the Medicare population in general, and for this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population in all states. **Tables 5-17** through **5-18** look at beneficiaries with behavioral health conditions, and **Tables 5-19** to **5-22** examine additional spending and utilization outcomes for special populations in **Table 5-11** where statistically significant slower growth in total Medicare expenditures was observed.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in 2 consecutive years of Medicare claims. To identify chronic

conditions, we used the Chronic Condition Indicator algorithm, developed by the Agency for Healthcare Research and Quality (AHRQ) as part of the Healthcare Cost and Utilization Project (discussed in more detail in Appendix D). The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one that lasts 12 months or longer and meets one or both of the following conditions: (a) limiting a person's ability to care for themselves, live independently, or interact with others; (b) requiring ongoing intervention with medical products, services, and/or special equipment. In addition, beneficiaries also had to be in the CMS-HCC "high-risk" category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 24 percent of beneficiaries fit this profile in Vermont.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 5.7.3**. Estimates in **Table 5-11** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to faster growth.

**Table 5-11**  
**Vermont: Comparison of average change estimates for total PBPM**  
**Medicare expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Multiple chronic conditions only				
Year One (N = 12,589)	-53.96	[-162.39, 54.46]	-70.04	[-153.94, 13.86]
Year Two (N = 14,341)	-71.56	[-192.46, 49.33]	-142.30*	[-217.24, -67.37]
Overall (N = 15,637)	-63.44	[-153.58, 26.71]	-108.94*	[-179.60, -38.27]
Behavioral health conditions only				
Year One (N = 8,157)	-97.24	[-218.26, 23.79]	-54.65	[-118.05, 8.76]
Year Two (N = 9,760)	-59.59	[-145.34, 26.15]	-65.85*	[-115.45, -16.26]
Overall (N = 10,457)	-76.37	[-166.25, 13.51]	-60.86*	[-103.62, -18.10]
Disabled beneficiaries only				
Year One (N = 13,095)	73.49*	[8.75, 138.22]	-51.16	[-124.07, 21.74]
Year Two (N = 16,344)	0.70	[-68.39, 69.78]	-57.29*	[-112.96, -1.62]
Overall (N = 17,239)	32.16	[-27.46, 91.79]	-54.64*	[-101.98, -7.31]
Dually eligible beneficiaries only				
Year One (N = 14,036)	-2.35	[-102.99, 98.29]	-34.33	[-100.30, 31.64]
Year Two (N = 17,104)	40.17	[-29.55, 109.88]	-56.47	[-117.27, 4.32]
Overall (N = 18,056)	21.57	[-51.79, 94.93]	-46.79*	[-92.64, -0.93]
Rural beneficiaries only				
Year One (N = 14,804)	45.10	[-38.84, 129.03]	-66.48*	[-99.18, -33.79]
Year Two (N = 17,046)	64.58	[-32.16, 161.32]	-68.23*	[-107.21, -29.25]
Overall (N = 18,117)	55.50	[-26.85, 137.84]	-67.42*	[-98.07, -36.76]

(continued)

**Table 5-11 (continued)**  
**Vermont: Comparison of average change estimates for total PBPM Medicare expenditures**  
**among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
SASH and all comparisons <sup>1</sup>				
Year One (N = 1,629)	-106.94*	[-176.97, -36.91]	-121.62*	[-181.90, -61.34]
Year Two (N = 2,015)	16.67	[-60.94, 94.28]	-32.82	[-100.02, 34.37]
Overall (N = 2,035)	-36.41	[-98.17, 25.35]	-70.95*	[-125.03, -16.88]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> The SASH CG includes both the PCMH and non-PCMH practices in the Vermont CG.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home; SASH = Support and Services at Home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in total Medicare expenditures is \$108.94 slower among **beneficiaries with multiple chronic conditions** in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- The *overall* growth in total Medicare expenditures is \$60.86 slower among **beneficiaries with behavioral health conditions** in Blueprint for Health practices relative to beneficiaries with behavioral health conditions in non-PCMH practices.
- The *overall* growth in total Medicare expenditures is \$54.64 slower among **disabled beneficiaries** in Blueprint for Health practices relative to disabled beneficiaries in non-PCMH practices.
- The *overall* growth in total Medicare expenditures is \$46.79 slower among **dually eligible beneficiaries** in Blueprint for Health practices relative to dually eligible beneficiaries in non-PCMH practices. The lack of statistical significance in Year One and Year Two, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in total Medicare expenditures is \$67.42 slower among **rural beneficiaries** in Blueprint for Health practices relative to rural beneficiaries in non-PCMH practices.

- The *overall* growth in total Medicare expenditures is \$70.95 slower among **SASH beneficiaries** in Blueprint for Health practices relative to all beneficiaries in non-PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

Although there are no significant association between the MAPCP Demonstration and total Medicare expenditures among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on the outcomes for this population. In the next subsection, we further explore the association of the MAPCP Demonstration in Vermont with outcomes for Medicare beneficiaries with multiple chronic conditions.

### **Beneficiaries with Multiple Chronic Conditions**

Care management potentially could have greater effects on populations with multiple chronic conditions than on the general population. In the next five tables, we consider the association between the MAPCP Demonstration and the subpopulation of beneficiaries with multiple chronic conditions, looking at quality of care, access to care, and expenditures among this population. The MAPCP Demonstration group and the PCMH and non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions.

Estimates in **Table 5-12** are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of patients receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. MAPCP Demonstration beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the “none” indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 5-13**. Estimates in **Table 5-13** are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improved access to ambulatory care, we expect MAPCP Demonstration beneficiaries with multiple chronic conditions to have a reduction (i.e., a significant negative value) in the rate of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 5.3.2**.

**Table 5-12**  
**Vermont: Comparison of average change estimates for process of care indicators among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 2,957)	-5.21	[-15.40, 4.97]	-1.20	[-3.85, 1.46]
Year Two (N = 1,966)	-5.82	[-14.53, 2.89]	-3.64*	[-7.17, -0.11]
Overall (N = 3,065)	-5.45	[-14.69, 3.79]	-2.16	[-4.60, 0.28]
Retinal eye examination				
Year One (N = 2,957)	4.65	[-2.49, 11.78]	-2.07	[-4.96, 0.82]
Year Two (N = 1,966)	-0.39	[-8.20, 7.42]	-0.22	[-4.52, 4.08]
Overall (N = 3,065)	2.66	[-3.50, 8.83]	-1.34	[-4.22, 1.53]
LDL-C screening				
Year One (N = 2,957)	-7.06*	[-12.06, -2.07]	-3.85*	[-7.35, -0.35]
Year Two (N = 1,966)	-5.59	[-14.45, 3.26]	-2.70	[-7.71, 2.30]
Overall (N = 3,065)	-6.48*	[-11.79, -1.18]	-3.40	[-7.15, 0.36]
Medical attention for nephropathy				
Year One (N = 2,957)	-2.63	[-9.58, 4.33]	-1.30	[-7.10, 4.49]
Year Two (N = 1,966)	-5.18	[-12.92, 2.55]	-1.38	[-5.99, 3.24]
Overall (N = 3,065)	-3.63	[-10.06, 2.79]	-1.33	[-5.99, 3.33]
Received all 4 diabetes tests				
Year One (N = 2,957)	-2.02	[-8.06, 4.02]	0.29	[-2.57, 3.15]
Year Two (N = 1,966)	-8.40*	[-13.21, -3.59]	-1.91	[-6.44, 2.61]
Overall (N = 3,065)	-4.53*	[-8.87, -0.19]	-0.58	[-3.62, 2.46]
Received none of the 4 diabetes tests				
Year One (N = 2,957)	-2.37	[-6.34, 1.59]	0.87	[-0.32, 2.07]
Year Two (N = 1,966)	-2.07	[-7.51, 3.36]	0.46	[-1.06, 1.97]
Overall (N = 3,065)	-2.25	[-6.69, 2.18]	0.71	[-0.36, 1.78]
Total lipid panel				
Year One (N = 6,498)	-3.14	[-7.30, 1.03]	-3.47*	[-6.44, -0.50]
Year Two (N = 4,344)	-2.96	[-7.34, 1.42]	-4.51*	[-8.69, -0.32]
Overall (N = 7,045)	-3.07	[-6.48, 0.34]	-3.88*	[-7.06, -0.69]

**NOTES:**

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend away from receiving **HbA1c screening**, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Blueprint for Health is associated with a decrease in the likelihood that MAPCP Demonstration beneficiaries with multiple chronic conditions received **low-density lipoprotein cholesterol (LDL-C) screening** by 6.48 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Blueprint for Health is associated with a decrease in the likelihood that MAPCP Demonstration beneficiaries with multiple chronic conditions received **all four diabetes tests** by 4.53 percentage points.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the Blueprint for Health is associated with a decrease in the likelihood that MAPCP Demonstration beneficiaries with multiple chronic conditions received **a total lipid panel test** by 3.88 percentage points.

**Table 5-13**  
**Vermont: Comparison of average change estimates for health outcomes among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 12,589)	0.08	[-3.09, 3.25]	-1.31	[-3.03, 0.42]
Year Two (N = 14,341)	3.20	[-3.20, 9.60]	0.31	[-2.24, 2.85]
Overall (N = 15,637)	1.76	[-2.90, 6.42]	-0.44	[-2.17, 1.29]
PQI admissions—overall <sup>2</sup>				
Year One (N = 12,589)	1.44	[-5.39, 8.26]	5.66*	[1.92, 9.39]
Year Two (N = 14,341)	2.93	[-2.22, 8.07]	3.59	[-0.49, 7.67]
Overall (N = 15,637)	2.24	[-3.34, 7.82]	4.54*	[0.98, 8.11]
PQI admissions—acute <sup>3</sup>				
Year One (N = 12,589)	0.45	[-4.42, 5.31]	2.38	[-0.16, 4.92]
Year Two (N = 14,341)	1.88	[-0.17, 3.93]	0.92	[-0.98, 2.81]
Overall (N = 15,637)	1.22	[-1.56, 4.00]	1.59	[-0.21, 3.39]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 12,589)	1.34	[-3.14, 5.82]	3.35*	[0.19, 6.52]
Year Two (N = 14,341)	1.46	[-2.72, 5.64]	2.61	[-0.60, 5.81]
Overall (N = 15,637)	1.41	[-2.77, 5.58]	2.95	[-0.04, 5.94]

**NOTES:**

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that Blueprint for Health is associated with changes in the rates of

**potentially avoidable catastrophic events or PQI admissions** among MAPCP Demonstration beneficiaries with multiple chronic conditions.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimates indicate that Blueprint for Health is associated with an increase in the rate of **overall PQI admissions** among MAPCP Demonstration beneficiaries with multiple chronic. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

The significant increases in PQI admission of Blueprint for Health beneficiaries with multiple chronic conditions had larger magnitudes than the same increases for the general Blueprint for Health Medicare population.

**Table 5-14** below reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for the population with multiple chronic conditions. With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events while a *positive* value corresponds to an *increase* in the rate of events.

Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index that are more likely to be in fifth quintile and less likely to be in the first quintile. These outcomes are modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a decrease in the likelihood of observing a value in either the lowest or highest quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 5.4.2**.

**Table 5-14**  
**Vermont: Comparison of average change estimates for access to care and coordination of**  
**care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 12,589)	-111.05	[-242.51, 20.41]	-24.72	[-109.33, 59.88]
Year Two (N = 14,341)	-87.98	[-195.95, 19.99]	-10.91	[-102.83, 81.01]
Overall (N = 15,637)	-98.63	[-212.93, 15.67]	-17.29	[-103.10, 68.52]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 12,589)	-15.14	[-128.06, 97.79]	-46.57*	[-90.78, -2.36]
Year Two (N = 14,341)	-12.72	[-136.61, 111.17]	-28.83	[-88.07, 30.41]
Overall (N = 15,637)	-13.84	[-130.80, 103.13]	-37.02	[-86.03, 11.99]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 12,589)	-4.90	[-19.72, 9.92]	-7.44	[-24.08, 9.20]
Year Two (N = 14,341)	-28.56*	[-53.49, -3.63]	-19.36	[-42.94, 4.23]
Overall (N = 15,637)	-17.64	[-35.83, 0.56]	-13.85	[-32.44, 4.74]
Primary care visits as percentage of total visits (higher quintile = larger percentage)				
Year One (N = 10,814)				
1st quintile	5.05*	[0.76, 9.34]	-1.92	[-6.10, 2.26]
5th quintile	-1.96*	[-3.75, -0.16]	0.67	[-0.84, 2.18]
Year Two (N = 8,193)				
1st quintile	2.40	[-2.97, 7.77]	-2.44	[-6.23, 1.35]
5th quintile	-0.91	[-3.03, 1.20]	0.90	[-0.56, 2.36]
Overall (N = 11,684)				
1st quintile	3.95	[-0.55, 8.44]	-2.14	[-6.04, 1.77]
5th quintile	-1.52	[-3.33, 0.29]	0.77	[-0.69, 2.22]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 2,599)	70.59*	[9.61, 131.56]	35.04	[-7.71, 77.79]
Year Two (N = 2,857)	43.08	[-12.43, 98.58]	-42.97	[-93.14, 7.21]
Overall (N = 4,660)	56.08*	[6.66, 105.51]	-6.09	[-43.88, 31.71]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 3,344)	-59.33	[-147.19, 28.54]	-0.87	[-29.72, 27.98]
Year Two (N = 3,736)	-23.33	[-50.39, 3.72]	-12.41	[-42.61, 17.79]
Overall (N = 5,914)	-40.28	[-89.64, 9.07]	-6.98	[-33.92, 19.97]

(continued)

**Table 5-14 (continued)**  
**Vermont: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average Estimate	90% confidence interval
Continuity of care (higher quintile = better continuity of care)				
Year One (N = 14,834)				
1st quintile	-1.95	[-4.37, 0.48]	-3.61*	[-5.87, -1.35]
5th quintile	1.04	[-0.17, 2.25]	2.02*	[0.85, 3.19]
Year Two (N = 11,641)				
1st quintile	-3.58*	[-6.34, -0.81]	-5.31*	[-8.68, -1.95]
5th quintile	1.85*	[0.55, 3.15]	2.92*	[1.28, 4.56]
Overall (N = 15,116)				
1st quintile	-2.64*	[-4.98, -0.29]	-4.33*	[-6.92, -1.75]
5th quintile	1.38*	[0.25, 2.52]	2.40*	[1.11, 3.69]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend towards a decrease in the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries with multiple chronic conditions, though at this time the *overall* estimate is not statistically significant.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **follow-up visits 14 days after discharge** among MAPCP Demonstration beneficiaries with multiple chronic conditions by 56.08 per 1,000 beneficiary quarters with a live discharge. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in continuity of care, as measured by concentration of visits. Specifically, Blueprint for Health is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries with multiple chronic conditions whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH provider, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH provider and referred providers.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in continuity of care, as measured by concentration of visits. Specifically, Blueprint for Health is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries with multiple chronic conditions whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH provider, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH provider and referred providers.

**Tables 5-15** and **5-16** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to MAPCP Demonstration practices and two comparison groups: beneficiaries with multiple chronic conditions attributed to PCMH comparison practices and beneficiaries with multiple chronic conditions attributed to non-PCMH practices. Estimates in **Table 5-15** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to faster growth.

The MAPCP Demonstration is also expected to result in less utilization of services such as all-cause admissions and ER care. **Table 5-16** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits not leading to hospitalization per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 5.6.2**.

**Table 5-15**  
**Vermont: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 12,589)	-53.96	[-162.39, 54.46]	-70.04	[-153.94, 13.86]
Year Two (N = 14,341)	-71.56	[-192.46, 49.33]	-142.30*	[-217.24, -67.37]
Overall (N = 15,637)	-63.44	[-153.58, 26.71]	-108.94*	[-179.60, -38.27]
Acute-care				
Year One (N = 12,589)	9.06	[-50.28, 68.39]	-23.32	[-85.58, 38.94]
Year Two (N = 14,341)	-0.38	[-55.98, 55.21]	-60.44*	[-111.80, -9.09]
Overall (N = 15,637)	3.98	[-41.92, 49.87]	-43.30	[-95.01, 8.40]
Post-acute-care				
Year One (N = 12,589)	-45.47*	[-81.51, -9.43]	-39.00*	[-65.40, -12.61]
Year Two (N = 14,341)	-35.43	[-91.95, 21.09]	-40.72*	[-74.31, -7.12]
Overall (N = 15,637)	-40.06*	[-78.37, -1.76]	-39.93*	[-66.67, -13.18]
ER				
Year One (N = 12,589)	7.28*	[1.50, 13.07]	-3.90	[-9.55, 1.74]
Year Two (N = 14,341)	4.37	[-2.09, 10.82]	-7.14	[-15.90, 1.62]
Overall (N = 15,637)	5.71*	[0.16, 11.26]	-5.64	[-12.56, 1.27]
Outpatient				
Year One (N = 12,589)	35.38*	[13.51, 57.24]	11.88	[-10.48, 34.23]
Year Two (N = 14,341)	22.26*	[4.92, 39.61]	-10.99	[-26.10, 4.11]
Overall (N = 15,637)	28.32*	[10.62, 46.02]	-0.43	[-16.80, 15.93]
Specialty physician				
Year One (N = 12,589)	-3.53	[-11.33, 4.26]	-4.66	[-11.27, 1.95]
Year Two (N = 14,341)	-8.77*	[-16.05, -1.49]	-2.50	[-7.38, 2.37]
Overall (N = 15,637)	-6.35	[-13.07, 0.36]	-3.50	[-7.56, 0.57]
Primary care physician				
Year One (N = 12,589)	-9.40*	[-12.65, -6.14]	-5.47*	[-8.92, -2.01]
Year Two (N = 14,341)	-6.47*	[-11.21, -1.73]	-5.52*	[-8.99, -2.04]
Overall (N = 15,637)	-7.82*	[-11.52, -4.13]	-5.49*	[-8.62, -2.37]
Home health				
Year One (N = 12,589)	-12.21	[-24.90, 0.48]	12.54*	[3.67, 21.41]
Year Two (N = 14,341)	-16.27	[-35.98, 3.43]	11.66*	[1.65, 21.68]
Overall (N = 15,637)	-14.40	[-30.11, 1.31]	12.07*	[3.25, 20.88]
Other non-facility				
Year One (N = 12,589)	-4.49	[-12.25, 3.27]	-4.67	[-12.70, 3.36]
Year Two (N = 14,341)	-6.58	[-14.63, 1.48]	-6.29*	[-12.07, -0.52]
Overall (N = 15,637)	-5.61	[-13.21, 1.98]	-5.55	[-11.71, 0.62]
Laboratory				
Year One (N = 12,589)	-1.74*	[-3.46, -0.03]	-2.51*	[-4.51, -0.52]
Year Two (N = 14,341)	-1.67	[-3.73, 0.38]	-1.52*	[-2.58, -0.47]
Overall (N = 15,637)	-1.71	[-3.50, 0.09]	-1.98*	[-3.31, -0.64]

(continued)

**Table 5-15 (continued)**  
**Vermont: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Imaging				
Year One (N = 12,589)	-2.06*	[-3.60, -0.52]	-1.78*	[-2.64, -0.92]
Year Two (N = 14,341)	0.31	[-1.55, 2.17]	-1.39*	[-2.23, -0.54]
Overall (N = 15,637)	-0.78	[-2.00, 0.43]	-1.57*	[-2.35, -0.79]
Other facility				
Year One (N = 12,589)	1.28	[-1.74, 4.31]	1.11	[-3.15, 5.37]
Year Two (N = 14,341)	1.66	[-2.20, 5.51]	1.76	[-4.18, 7.69]
Overall (N = 15,637)	1.48	[-1.93, 4.89]	1.46	[-3.56, 6.47]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the percent10 level.

- There are no statistically significant differences in the *overall* growth of **total Medicare expenditures** among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in PCMH practices.
- The *overall* growth in **total Medicare expenditures** is \$108.94 slower among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- Relative to beneficiaries in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **acute-care expenditures** among beneficiaries with multiple chronic conditions in Blueprint for Health practices, though at this time the *overall* estimate is not statistically significant.

- The *overall* growth in **post-acute-care expenditures** is \$40.06 slower among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **post-acute-care expenditures** is \$39.93 slower among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- The *overall* growth in **expenditures for ER visits not leading to hospitalization** is faster among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **outpatient (including FQHCs) expenditures** was \$28.32 faster among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in PCMH practices.
- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **expenditures for specialty physicians** among beneficiaries with multiple chronic conditions in Blueprint for Health practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **expenditures for primary care physicians** is slower among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in both PCMH and non-PCMH practices.
- The *overall* growth in **home health expenditures** is slower among beneficiaries with multiple chronic conditions in Blueprint for Health practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- Relative to beneficiaries with multiple chronic conditions in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **other non-facility expenditures** among beneficiaries with multiple chronic conditions in Blueprint for Health practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **laboratory and imaging expenditures** is slower relative to beneficiaries with multiple chronic conditions in non-PCMH practices.

**Table 5-16**  
**Vermont: Comparison of average change estimates for utilization among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 12,589)	-6.58	[-20.18, 7.02]	8.97*	[1.05, 16.89]
Year Two (N = 14,341)	3.44	[-7.82, 14.69]	4.81	[-2.55, 12.16]
Overall (N = 15,637)	-1.19	[-11.04, 8.66]	6.73*	[0.13, 13.32]
ER visits not leading to hospitalization				
Year One (N = 12,589)	32.88*	[4.88, 60.88]	25.48*	[5.32, 45.65]
Year Two (N = 14,341)	27.32*	[4.34, 50.29]	17.03	[-6.48, 40.54]
Overall (N = 15,637)	29.88*	[6.38, 53.39]	20.93*	[0.15, 41.72]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions currently to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **all-cause admissions** by 6.73 per 1,000 beneficiary quarters among demonstration beneficiaries with multiple chronic conditions. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **ER visits not leading to a hospitalizations** by 29.88 per 1,000 beneficiary quarters among demonstration beneficiaries with multiple chronic conditions.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for

Health is associated with an increase in the rate of **ER visits not leading to a hospitalizations** by 20.93 per 1,000 beneficiary quarters among demonstration beneficiaries with multiple chronic conditions. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

As reported in *Table 5-11*, the overall growth in total Medicare expenditures is \$60.86 slower for beneficiaries with behavioral health conditions attributed to Blueprint for Health practices relative to beneficiaries with behavioral health conditions attributed to non-PCMH comparison practices. In the next subsection, we further explore the association between the MAPCP Demonstration in Vermont and Medicare beneficiaries with behavioral health conditions. While there are no significant associations between the MAPCP Demonstration and total Medicare expenditures among beneficiaries with behavioral health conditions in Blueprint for Health practices relative to beneficiaries in PCMH comparison practices, we also explore this association further.

### **Beneficiaries with Behavioral Health Conditions**

*Tables 5-17* and *5-18* report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, for Medicare beneficiaries with behavioral health conditions in Blueprint for Health compared to two comparison groups: PCMHs and non-PCMHs. Research has shown that individuals with psychosocial and substance abuse disorders have substantial unmet needs for health care. Within the medical home, significant care management and coordination resources may be required to meet the needs of these patients. While the Blueprint for Health implemented the Hub and Spoke initiative to address the needs of Medicaid beneficiaries with behavioral health issues and opioid addictions, behavioral health specialists also joined the staff of CHTs. There was also a pilot that involved a psychiatrist rotating among Blueprint for Health practices. Blueprint for Health practices still expressed a need for additional resources to support behavioral health, specifically for patients with substance abuse and mental health issues. These individuals are expected to benefit from the initiatives to improve access to, coordination of, and continuity of care with primary care and behavioral health providers. The Blueprint for Health and the Hub and Spoke initiative are expected to increase care coordination between primary care providers and behavioral health providers for beneficiaries with mental illnesses and substance use disorders. Improved access and care coordination potentially could increase use of outpatient behavioral health services and primary care visits, and, in turn, more appropriate use of outpatient care could lead to decreases in rates of hospitalizations and ER visits (both overall and for behavioral health conditions specifically). Given the potential impact on both non-behavioral health and behavioral health service use, we examine both types of service use and expenditures.

For this analysis, beneficiaries with behavioral health conditions are defined as those with at least one inpatient claim and/or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder during the 12-month period before participating in the demonstration. Using this criterion, on average, about 16.7 percent of the study sample (Blueprint for Health and comparison group beneficiaries) is identified as having a behavioral

health condition.<sup>4</sup> The expenditure outcomes of interest include total Medicare expenditures, expenditures for acute hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments. The service utilization outcomes of interest include all-cause inpatient admissions, all-cause ER visits, outpatient visits with a principal diagnosis of a behavioral health disorder, inpatient admissions with principal diagnosis of behavioral health disorder, and ER visits with a principal diagnosis of a behavioral health disorder. All utilization measures represent a quarterly rate of visits per 1,000 beneficiaries.

Estimates in **Table 5-17** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. Estimates in **Table 5-18** are interpreted as the difference in the rate of utilization associated with the MAPCP Demonstration. A *negative* value corresponds to a *decrease* in the rate of utilization, while a *positive* value corresponds to an *increase* in the rate of utilization.

**Table 5-17**  
**Vermont: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 8,157)	-97.24	[-218.26, 23.79]	-54.65	[-118.05, 8.76]
Year Two (N = 9,760)	-59.59	[-145.34, 26.15]	-65.85*	[-115.45, -16.26]
Overall (N = 10,457)	-76.37	[-166.25, 13.51]	-60.86*	[-103.62, -18.10]
Acute-care				
Year One (N = 8,157)	0.03	[-65.18, 65.24]	-17.39	[-66.11, 31.33]
Year Two (N = 9,760)	5.74	[-43.45, 54.93]	-2.55	[-31.65, 26.55]
Overall (N = 10,457)	3.19	[-47.97, 54.35]	-9.16	[-33.36, 15.03]
ER visits not leading to hospitalization				
Year One (N = 8,157)	-0.62	[-6.30, 5.07]	0.48	[-4.41, 5.38]
Year Two (N = 9,760)	1.13	[-4.02, 6.29]	-3.94	[-9.41, 1.54]
Overall (N = 10,457)	0.35	[-4.59, 5.29]	-1.97	[-6.85, 2.91]
Total for services with a principal diagnosis of a behavioral health condition				
Year One (N = 8,157)	-0.30	[-6.33, 5.73]	-5.95	[-16.99, 5.09]
Year Two (N = 9,760)	-8.58*	[-16.25, -0.91]	-4.77	[-10.51, 0.96]
Overall (N = 10,457)	-4.89	[-10.18, 0.40]	-5.30	[-10.88, 0.29]

(continued)

<sup>4</sup> A behavioral health condition was present in 15.9 percent of beneficiaries in the Blueprint for Health group, 18.2 percent of beneficiaries in the PCMH comparison group, and 16.6 percent of beneficiaries in the non-PCMH comparison group.

**Table 5-17 (continued)**  
**Vermont: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total for services with a secondary diagnosis of a behavioral health condition				
Year One (N = 8,157)	25.35	[-8.12, 58.81]	-29.62	[-84.35, 25.12]
Year Two (N = 9,760)	21.38	[-12.66, 55.41]	-4.45	[-31.26, 22.37]
Overall (N = 10,457)	23.15	[-3.18, 49.47]	-15.66	[-42.98, 11.65]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$60.86 slower among beneficiaries with behavioral health conditions in Blueprint for Health practices relative to beneficiaries with behavioral health conditions in non-PCMH practices.
- Relative to beneficiaries with behavioral health conditions in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **expenditures for total services with a principal diagnosis of a behavioral health condition** among beneficiaries with behavioral health conditions in Blueprint for Health practices, though at this time the *overall* estimate is not statistically significant.

**Table 5-18**  
**Vermont: Comparison of average change estimates for behavioral and non-behavioral health care utilization among beneficiaries with behavioral health conditions: First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG PCMHs		Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause inpatient admissions				
Year One (N = 8,157)	0.91	[-10.76, 12.58]	4.42	[-1.04, 9.89]
Year Two (N = 9,760)	6.97	[-2.68, 16.61]	2.29	[-4.27, 8.85]
Overall (N = 10,457)	4.27	[-5.34, 13.88]	3.24	[-1.17, 7.65]
ER visits not leading to hospitalization				
Year One (N = 8,157)	14.90	[-10.10, 39.90]	29.16*	[10.13, 48.20]
Year Two (N = 9,760)	18.78	[-0.35, 37.92]	16.27	[-0.44, 32.98]
Overall (N = 10,457)	17.05	[-1.91, 36.02]	22.02*	[6.51, 37.53]
Behavioral health inpatient admissions				
Year One (N = 8,157)	0.79	[-1.10, 2.68]	-1.68	[-3.38, 0.01]
Year Two (N = 9,760)	-0.38	[-1.64, 0.88]	-1.14	[-2.60, 0.31]
Overall (N = 10,457)	0.14	[-1.31, 1.60]	-1.38*	[-2.56, -0.21]
Behavioral health ER visits				
Year One (N = 8,157)	4.65	[-0.30, 9.61]	2.77	[-0.85, 6.39]
Year Two (N = 9,760)	-0.63	[-6.44, 5.18]	2.70	[-0.84, 6.24]
Overall (N = 10,457)	1.73	[-3.11, 6.56]	2.73	[-0.28, 5.74]
Behavioral health outpatient visits <sup>1</sup>				
Year One (N = 7,655)	14.86	[-17.54, 47.25]	72.44*	[35.51, 109.38]
Year Two (N = 9,152)	7.98	[-28.54, 44.51]	21.93	[-10.87, 54.72]
Overall (N = 9,963)	11.05	[-18.82, 40.92]	44.47*	[13.15, 75.80]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes, because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with behavioral health conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for

Health is associated with an increase in the rate of **ER visits not leading to hospitalization** by 22.02 per 1,000 beneficiary quarters among demonstration beneficiaries with behavioral health conditions. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

- When using beneficiaries with behavioral health conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with a decrease in the rate of **behavioral health inpatient admission** by 1.38 per 1,000 beneficiary quarters among demonstration beneficiaries with behavioral health conditions.
- When using beneficiaries with behavioral health conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **behavioral health outpatient visits** by 44.47 per 1,000 beneficiary quarters among demonstration beneficiaries with behavioral health conditions. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

As reported in **Table 5-11**, the overall growth in total Medicare expenditures is \$54.64 slower for disabled Medicare beneficiaries attributed to Blueprint for Health practices relative to disabled Medicare beneficiaries attributed to non-PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this special population, to provide additional information about what possibly drove the reductions in Medicare expenditures.

### **Beneficiaries Whose Initial Medicare Eligibility Was Due to Disability**

About 26 percent of Blueprint for Health Medicare beneficiaries were originally eligible for Medicare due to disability. Because disabled beneficiaries attributed to Blueprint for Health practices experienced significant slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 5-19**.

**Table 5-19**  
**Vermont: Comparison of average change estimates for selected expenditure and utilization**  
**measures among disabled Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Acute-care expenditures		
Year One (N = 13,095)	-36.91	[-94.63, 20.81]
Year Two (N = 16,344)	-10.40	[-46.64, 25.84]
Overall (N = 17,239)	-21.86	[-56.56, 12.84]
ER visits not leading to hospitalization expenditures		
Year One (N = 13,095)	-2.86	[-7.15, 1.43]
Year Two (N = 16,344)	-5.50*	[-9.52, -1.48]
Overall (N = 17,239)	-4.36*	[-8.23, -0.49]
Primary care physician expenditures		
Year One (N = 13,095)	-3.53*	[-6.70, -0.35]
Year Two (N = 16,344)	-2.73	[-5.75, 0.30]
Overall (N = 17,239)	-3.07*	[-5.95, -0.19]
Specialty physician expenditures		
Year One (N = 13,095)	-4.21	[-10.16, 1.75]
Year Two (N = 16,344)	-5.51*	[-11.01, -0.01]
Overall (N = 17,239)	-4.95*	[-8.87, -1.02]
All-cause admissions		
Year One (N = 13,095)	6.02*	[1.26, 10.78]
Year Two (N = 16,344)	0.52	[-4.11, 5.15]
Overall (N = 17,239)	2.90	[-0.75, 6.55]
ER visits not leading to a hospitalization		
Year One (N = 13,095)	10.59	[-5.78, 26.96]
Year Two (N = 16,344)	10.00	[-8.08, 28.07]
Overall (N = 17,239)	10.25	[-6.24, 26.75]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 1,908)	-4.38	[-50.05, 41.30]
Year Two (N = 2,705)	-12.79	[-45.33, 19.76]
Overall (N = 3,573)	-9.00	[-43.88, 25.88]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall. A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **expenditures for ER visits not leading to hospitalization** is \$4.36 slower among disabled beneficiaries in Blueprint for Health practices relative to disabled beneficiaries in non-PCMH practices.
- The *overall* growth in **expenditures for primary care physicians** is \$3.07 slower among disabled beneficiaries in Blueprint for Health practices relative to disabled beneficiaries in non-PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **expenditures for specialty physicians** is \$4.95 slower among disabled beneficiaries in Blueprint for Health practices relative to disabled beneficiaries in non-PCMH practices.

As reported in **Table 5-11**, the overall growth in total Medicare expenditures is \$46.79 slower for dually eligible Medicare beneficiaries attributed to Blueprint for Health practices relative to dually eligible Medicare beneficiaries attributed to non-PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this special population, to provide additional information about what possibly drove the reductions in Medicare expenditures.

### **Beneficiaries Dually Eligible for Medicare and Medicaid**

Approximately 27 percent of Blueprint for Health Medicare beneficiaries are dually eligible for Medicare and Medicaid. Because dually eligible beneficiaries attributed to Blueprint for Health practices experience significant slower rates of total Medicare expenditure growth, we examine additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 5-20**.

**Table 5-20**  
**Vermont: Comparison of average change estimates for selected expenditure and utilization**  
**measures among dually eligible Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Acute-care expenditures		
Year One (N = 14,036)	-25.52	[-76.61, 25.57]
Year Two (N = 17,104)	-14.67	[-58.61, 29.27]
Overall (N = 18,056)	-19.42	[-54.85, 16.02]
ER visits not leading to hospitalization expenditures		
Year One (N = 14,036)	-1.94	[-4.90, 1.01]
Year Two (N = 17,104)	-7.70*	[-11.11, -4.29]
Overall (N = 18,056)	-5.18*	[-8.06, -2.30]
Primary care physician expenditures		
Year One (N = 14,036)	-2.60	[-5.86, 0.65]
Year Two (N = 17,104)	-1.89	[-5.02, 1.25]
Overall (N = 18,056)	-2.20	[-5.18, 0.78]
Specialty care physician expenditures		
Year One (N = 14,036)	-4.14	[-9.69, 1.41]
Year Two (N = 17,104)	-7.00*	[-12.42, -1.57]
Overall (N = 18,056)	-5.75*	[-9.09, -2.40]
All-cause admissions		
Year One (N = 14,036)	7.63*	[2.41, 12.85]
Year Two (N = 17,104)	3.58	[-2.08, 9.24]
Overall (N = 18,056)	5.35*	[0.78, 9.93]
ER visits not leading to a hospitalization		
Year One (N = 14,036)	19.49*	[5.19, 33.79]
Year Two (N = 17,104)	12.06	[-3.63, 27.75]
Overall (N = 18,056)	15.31*	[1.44, 29.18]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 2,109)	17.49	[-15.03, 50.01]
Year Two (N = 3,037)	-15.82	[-51.30, 19.66]
Overall (N = 4,040)	-0.89	[-29.58, 27.79]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall. A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10% level.

- The *overall* growth in **expenditures for ER visits not leading to hospitalization** is \$5.18 slower among dually eligible beneficiaries in Blueprint for Health practices relative to dually eligible beneficiaries in non-PCMH practices.
- The *overall* growth in **expenditures for specialty physicians** is \$5.75 slower among dually eligible beneficiaries in Blueprint for Health practices relative to dually eligible beneficiaries in non-PCMH practices.
- When using dually eligible beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **all-cause admissions** by 5.35 per 1,000 beneficiary quarters among dually eligible demonstration beneficiaries. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using dually eligible beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **ER visits not leading to hospitalization** by 15.31 per 1,000 beneficiary quarters among dually eligible demonstration beneficiaries. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

As reported in **Table 5-11**, the overall growth in total Medicare expenditures is \$67.42 slower for rural Medicare beneficiaries attributed to Blueprint for Health practices relative to rural Medicare beneficiaries attributed to non-PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this special population, to provide additional information about what possibly drove the reductions in Medicare expenditures.

### **Beneficiaries Living in Rural Areas**

About 28 percent of Blueprint for Health beneficiaries lived in rural areas. Because rural beneficiaries attributed to Blueprint for Health practices experienced significant slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 5-21**.

**Table 5-21**  
**Vermont: Comparison of average change estimates for selected expenditure and utilization**  
**measures among rural Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Acute-care expenditures		
Year One (N = 14,804)	-5.11	[-24.65, 14.42]
Year Two (N = 17,046)	-4.82	[-28.91, 19.26]
Overall (N = 18,117)	-4.96	[-22.08, 12.17]
ER visits not leading to hospitalization expenditures		
Year One (N = 14,804)	-0.60	[-4.61, 3.41]
Year Two (N = 17,046)	-5.94*	[-10.70, -1.18]
Overall (N = 18,117)	-3.45	[-7.53, 0.62]
Primary care physician expenditures		
Year One (N = 14,804)	-1.66	[-4.42, 1.10]
Year Two (N = 17,046)	-2.70	[-6.03, 0.64]
Overall (N = 18,117)	-2.21	[-5.20, 0.77]
Specialty care physician expenditures		
Year One (N = 14,804)	-4.55*	[-8.69, -0.42]
Year Two (N = 17,046)	-5.21*	[-9.30, -1.12]
Overall (N = 18,117)	-4.90*	[-8.62, -1.19]
All-cause admissions		
Year One (N = 14,804)	3.66	[-1.57, 8.88]
Year Two (N = 17,046)	0.75	[-3.17, 4.68]
Overall (N = 18,117)	2.11	[-1.73, 5.94]
ER visits not leading to a hospitalization		
Year One (N = 14,804)	24.62*	[3.18, 46.06]
Year Two (N = 17,046)	17.66*	[0.85, 34.47]
Overall (N = 18,117)	20.90*	[2.55, 39.25]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 2,016)	-4.69	[-34.94, 25.55]
Year Two (N = 2,645)	-19.74	[-61.46, 21.98]
Overall (N = 3,696)	-12.53	[-43.93, 18.88]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall. A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- Relative to rural beneficiaries in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **expenditures for ER visits not leading to hospitalization** among rural beneficiaries in Blueprint for Health practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **expenditures for specialty physicians** is \$4.90 slower among rural beneficiaries in Blueprint for Health practices relative to rural beneficiaries in non-PCMH practices.
- When using rural beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **ER visits not leading to hospitalization** by 20.90 per 1,000 beneficiary quarters among rural demonstration beneficiaries.

As reported in **Table 5-11**, the overall growth in total Medicare expenditures is \$70.95 slower for SASH Medicare beneficiaries attributed to Blueprint for Health practices relative to all Medicare beneficiaries attributed to non-PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this special population, to provide additional information about what possibly drove the reductions in Medicare expenditures.

### **Beneficiaries Who Participated in the Support and Services at Home Program**

About 3 percent of Blueprint for Health beneficiaries are participating in the SASH program. Because SASH beneficiaries attributed to Blueprint for Health practices experience significant slower rates of total Medicare expenditure growth, we examine additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 5-22**.

**Table 5-22**  
**Vermont: Comparison of average change estimates for selected expenditure and utilization measures among Medicare beneficiaries participating in the SASH program: First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Acute-care expenditures		
Year One (N = 1,629)	-59.20*	[-94.34, -24.05]
Year Two (N = 2,015)	-3.37	[-44.97, 38.23]
Overall (N = 2,035)	-27.34	[-58.63, 3.94]
ER visits not leading to hospitalization expenditures		
Year One (N = 1,629)	-0.51	[-4.32, 3.31]
Year Two (N = 2,015)	-3.12	[-8.24, 2.01]
Overall (N = 2,035)	-2.00	[-6.08, 2.08]

(continued)

**Table 5-22 (continued)**  
**Vermont: Comparison of average change estimates for selected expenditure and utilization measures among Medicare beneficiaries participating in the SASH program: First 2 years of MAPCP Demonstration**

Outcome	Blueprint for Health practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Primary care physician expenditures		
Year One (N = 1,629)	-3.06*	[-5.89, -0.23]
Year Two (N = 2,015)	-1.62	[-4.91, 1.67]
Overall (N = 2,035)	-2.24	[-5.09, 0.61]
Specialty care physician expenditures		
Year One (N = 1,629)	-8.98*	[-13.35, -4.60]
Year Two (N = 2,015)	-8.78*	[-12.36, -5.21]
Overall (N = 2,035)	-8.87*	[-11.94, -5.79]
All-cause admissions		
Year One (N = 1,629)	-5.05	[-12.50, 2.39]
Year Two (N = 2,015)	1.15	[-6.17, 8.48]
Overall (N = 2,035)	-1.51	[-7.53, 4.51]
ER visits not leading to a hospitalization		
Year One (N = 1,629)	17.21	[-3.00, 37.41]
Year Two (N = 2,015)	13.27	[-10.71, 37.24]
Overall (N = 2,035)	14.96	[-5.45, 35.37]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 262)	-13.52	[-69.78, 42.74]
Year Two (N = 425)	49.77*	[5.57, 93.97]
Overall (N = 535)	23.86	[-14.68, 62.41]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall. A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Blueprint for Health participants eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home; SASH = Support and Services at Home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **expenditures for specialty physicians** is \$8.87 slower among beneficiaries in Blueprint for Health practices participating in SASH relative to beneficiaries in non-PCMH practices.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that Blueprint for Health is associated with an increase in the rate of **30-day unplanned readmissions** by 49.77 per 1,000 beneficiary quarters among demonstration beneficiaries participating in SASH. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

### 5.7.3 Discussion of Special Populations

The Blueprint for Health intentionally emphasizes certain subpopulations by including special initiatives for them. Specific interventions were targeted toward individuals with multiple chronic conditions or otherwise identified as high-risk. The Hub and Spoke initiative provided an avenue for local care management and coordination for individuals with behavioral health and substance abuse issues. The SASH program provided unique opportunities for Medicare beneficiaries in supported housing.

We found that the change associated with the Blueprint for Health for one subpopulation was of a greater favorable magnitude than for the general Blueprint for Health Medicare population. Earlier we noted that the growth in total Medicare expenditures was \$65 PBPM slower for Blueprint for Health beneficiaries than for beneficiaries assigned to non-PCMH comparison practices (*Table 5-8*). When we focused only on beneficiaries with multiple chronic conditions, the growth was \$109 slower (*Table 5-11*). The Blueprint for Health had a significant association with total expenditures for other subpopulations as well. Disabled Blueprint for Health beneficiaries experienced slower growth rates than non-PCMH beneficiaries (\$55 less); the rate for beneficiaries with behavioral health conditions was \$61 PBPM slower; dually eligible beneficiaries' rate was \$47 PBPM slower; rural beneficiaries' rate was \$67 PBPM slower; and SASH beneficiaries' rate was \$71 PBPM slower.

As with the general Medicare population, there were some unfavorable outcomes associated with the Blueprint for Health for beneficiaries with multiple chronic conditions. As with the favorable outcomes, the magnitude of the unfavorable outcomes was larger among this subpopulation. For example, among the general Medicare population, there was an increase in ER visits not leading to hospitalization of 10 visits per 1,000 beneficiaries relative to non-PCMH comparison practices and 16 visits relative to PCMH comparison practices (*Table 5-9*). Among beneficiaries with multiple chronic conditions, the increases were 21 and 30 visits per 1,000 beneficiaries, respectively (*Table 5-16*).

The Hub and Spoke initiative was implemented to increase care coordination specifically for beneficiaries with behavioral and substance abuse issues, in an effort to decrease costs of care by lowering their rates of hospitalizations and ER visits. Slower growth for beneficiaries with behavioral conditions occurred relative to non-PCMH comparison practices (*Table 5-17*). There is some evidence that this decrease in expenditures may have been driven by services directly related to the beneficiaries' behavioral health conditions as there was also a relative decrease in behavioral health inpatient admissions but no decrease in all-cause admissions (*Table 5-18*).

However, there were also no relative decreases in behavioral health ER visits or behavioral health expenditures on services with a primary diagnosis of a behavioral health condition.

## **5.8 Discussion of Vermont's Year Two Findings and Next Steps**

At the end of Year Two, support for the initiative remained strong among providers and practices. There were 112 Blueprint for Health practices with 585 providers, and there were minimal changes to the overall structure of the Blueprint for Health during Year Two. Numerous enhancements to the structure were made. During Year Two, CHTs were more effectively integrated into practice workflow and the local community. The CHTs added several new staff to their teams to support Blueprint for Health practices. They increased the number of dietitians, certified diabetes educators, social workers, wellness nurses, care coordinators, behavioral health professionals, and panel managers. There was concern from commercial payers, however, about a perceived lack of accountability for CHTs. Also during the second year, practices engaged in many activities focused on improving quality of care, reducing adverse events and medical errors, and improving patient health outcomes. The Blueprint for Health encouraged a cultural change emphasizing constant quality improvement. It also provided a framework for encouraging beneficiaries to do more self-management. Many practices had weekly meetings to discuss areas for improving quality at the practices, and providers started to use EHRs and other screening tools during Year Two.

Our analyses did not seem to find that process of care measures improved among Blueprint for Health beneficiaries by Year Two (Table 5-4). During this year, however, CHTs and SASH teams were just beginning to become integrated with practices, and providers were starting to establish new patient screenings and starting to use EHR data to guide care. Because these important practice transformation changes were just getting underway in Year Two, examining how these changes have affected processes of care in Year Three, when they are fully integrated into practices, will be critical.

Following up with patients after discharge was also a focus in Year Two. During Year Two, many practices improved access to care by providing extended hours, 24/7 availability, same-day appointments, online patient portals, and telemedicine. These efforts to increase access to care may have prevented increases in beneficiaries' needs for primary care office visits despite the initiative's greater emphasis on primary care. Several practices and other stakeholders commented during site visits on the increased integration of and coordination with CHTs and SASH program staff and Blueprint for Health practices throughout Year Two. There were regular meetings to discuss common patients and to ensure that services were not duplicated. Practices also used ProviderLink to send referrals and share notes with CHT and SASH program staff. There has also been greater communication and coordination between practices and other health care providers. The quantitative analysis found increases in the coordination of care scores, which seems to indicate that the initiative's emphasis on primary care and coordination of care are associated with a positive change.

Blueprint for Health aims to decrease expenditures on some high-cost services and increase expenditures on other health care services. Relative to the non-PCMH comparison group, the Blueprint for Health beneficiaries did see slower growth in their total Medicare expenditures (**Table 5-8**). Among specific health care service types, there was slower growth in acute-care, post-acute-care, ER, specialty physician, and imaging services. There was growth,

however, in the utilization rate of ER visits not leading to hospitalization (**Table 5-9**). Site visit findings indicated that beneficiaries were self-managing at a higher rate, but still might not know when it was appropriate to visit either the ER or their primary medical home for a symptom. This may explain the increase in ER utilization and the decrease in ER expenditures (if beneficiaries visited the ER at a higher rate, but for less costly conditions or symptoms). Our budget neutrality estimates showed Medicare expenditure reductions substantially exceeding the fees paid to Blueprint for Health practices, but, by Year Two, these savings were not yet statistically significant (**Table 5-10c**).

During Year Two, the Hub and Spoke initiative was implemented to address the needs of individuals with behavioral health issues and opioid addictions. Licensed mental health and substance abuse clinicians also were added to CHTs. The Blueprint for Health also launched a pilot that involved a psychiatrist rotating among several practices. Although these behavioral health initiatives were relatively new to practices in Year Two, they seemed to be positively associated with slowing Medicare expenditure growth for this population. For beneficiaries with behavioral health conditions, the growth was slower by \$60.86 PBPM compared to non-PCMH practices (**Table 5-17**). Other than behavioral health inpatient admissions, there were no relative decreases in utilization (**Table 5-18**). Instead, there was faster growth in ER visits not leading to hospitalization and in behavioral health outpatient visits. The Hub and Spoke initiative, behavioral health specialists joining the staff of CHTs, and the pilot that involved a psychiatrist rotating among Blueprint for Health practices are likely to be associated with reductions in the use of health care services related to other conditions complicated by these beneficiaries' behavioral health conditions. However, at this early stage in the initiatives targeting behavioral health disorders, there was no evidence of an association.

Plans for Year Three of the demonstration focus on the continued roll-out of the Hub and Spoke initiative and expansion and roll-out of health information technology platforms. The Hub and Spoke model will be expanded to serve commercially insured patients. Commercial payers will develop contracts with each of the five hubs, regional treatment centers responsible for coordinating care of people seeking opioid addiction treatment. The Blueprint will begin running data through Vermont's all-payer claims database, VHCURES, to identify commercially insured patients who sought care for opioid addiction to try to recruit them into the program.

Plans for Year Three also include continued expansion of additional health IT infrastructure by introducing two new tools: VITL Access and the Blueprint Web Portal. VITL Access is a secure portal allowing practices to query aggregated patient information from various providers and health systems obtained through the VHIE. The Blueprint Web Portal is another provider portal allowing practices and CHTs to upload information such as patient demographics in their panel and update information on their providers and staff. The goal of the portal is to help capture workforce data, a process previously done manually by state staff.

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## CHAPTER 6

### NORTH CAROLINA

In this chapter, we report qualitative and quantitative findings related to the implementation of North Carolina's multi-payer initiative, which built on North Carolina's regional Community Care Networks and patient-centered medical homes (PCMH) program. We report qualitative findings from the second of three annual site visits to North Carolina, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the association of the demonstration with changes in our five outcome domains, as described in *Section 1.1.2*. We also report characteristics of the practices participating in the state initiative.

For the second site visit, which occurred from October 21 through 23, 2013, four teams traveled across the state, covering a large geographic region from Raleigh in the central part of the state to the Lower Cape Fear region in the southeast and the Blue Ridge region in the northwest. The site visit focused on changes in implementation experiences occurring since the last site visit in October 2012. During the site visit, we interviewed providers, nurses, care managers, and administrative staff from participating PCMHs and regional Community Care of North Carolina (CCNC) offices to learn about the perceived effects of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's entrance into the MAPCP Demonstration. We met with key state officials and central-office CCNC staff involved with the implementation of the demonstration to learn how North Carolina's initiative, including the payment model and other efforts to support practice transformation, were progressing and if changes were made to meet performance goals. We also met with payers to learn about their experiences with implementation and whether the payments to practices were effective in producing desired outcomes or whether modifications were warranted. Last, we met with a patient advocate and a member of a provider organization to learn if they had observed improvements in beneficiary experience with care and any changes in the way care is delivered.

The chapter is organized by major evaluation domains. *Section 6.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in North Carolina's initiative. *Section 6.2* reports practice transformation activities. Subsequent sections report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 6.3*); access to care and coordination of care (*Section 6.4*); beneficiary experience with care (*Section 6.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 6.6*); and special populations (*Section 6.7*). A discussion of the findings concludes the chapter (*Section 6.8*).

#### 6.1 State Implementation

In this section, we present findings related to North Carolina's implementation of the MAPCP Demonstration and changes made by the state, practices, and payers in the second year. We focus on information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?
- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors affected implementation?

The state profile in **Section 6.1.1** of this report, which describes the status of major features of the state initiative during the second year of the MAPCP Demonstration and the context in which it operated, draws on a variety of sources, including quarterly reports submitted to CMS by the North Carolina MAPCP Demonstration project staff; monthly state-CMS calls; news articles; state and federal Web sites; and the site visit conducted in October 2013.

**Section 6.1.2** presents a logic model reflecting our understanding of the link between specific elements of North Carolina's MAPCP Demonstration and expected changes in outcomes.

**Section 6.1.3** presents key findings gathered from the site visit about the implementation experience of state officials, payers, and providers during the second year of the MAPCP Demonstration. We conclude the State Implementation section with lessons learned during the first 2 years of the MAPCP Demonstration in **Section 6.1.4**.

### **6.1.1 North Carolina State Profile as of October 2013 Evaluation Site Visit**

North Carolina is building upon its regional Community Care Networks and PCMH program to implement the MAPCP Demonstration. These regional networks evolved from earlier Medicaid programs designed to support primary care practices through per member per month (PMPM) fees paid to networks and practices that agreed to coordinate care and support population health efforts. North Carolina's case management programs began in 1983, when the North Carolina Foundation for Advanced Health Programs partnered with the state to create the Wilson County Health Plan. In 1991, North Carolina received a Medicaid 1915(b) waiver to expand the model statewide, creating a primary care case management program (Carolina Access), which led to the current CCNC program.

In partnership with the state, CCNC serves as the central organization overseeing operations of 14 nonprofit, community-based networks, four of which served the participating MAPCP Demonstration counties. Characteristics of the four CCNC networks participating in the MAPCP Demonstration are shown in **Table 6-1**. CCNC networks sought to improve quality and promote appropriate utilization of resources to manage health care costs. CCNC supported primary care practices and hospitals through care coordination, disease and care management, and quality improvement resources. A specific emphasis was on managing transitions across care settings and analyzing data to identify patients who would benefit most from care management efforts, including medication management. Interventions targeted individuals with chronic conditions (e.g., diabetes, asthma, hypertension, congestive heart failure).

**Table 6-1**  
**Characteristics of CCNC networks participating in the North Carolina MAPCP Demonstration**

<b>Networks</b>	<b>Network 1: AccessCare</b>	<b>Network 2: Community Care of Western NC</b>	<b>Network 3: Community Care of the Lower Cape Fear</b>	<b>Network 4: Northern Piedmont Community Care</b>
Year established <sup>1</sup>	1998	1998	2003	Not available
Number of counties covered <sup>1</sup>	23	8	6	6
List of counties with practices enrolled in MAPCP Demonstration	Avery Ashe Watauga	Transylvania	Bladen Columbus	Granville
Number of practices	280	82	154	55
Number of practices ever enrolled in MAPCP Demonstration as of Sept. 30, 2013 <sup>1</sup>	20	4	26	6
Number of hospitals <sup>1</sup>	29	9	7	10
Number of care managers <sup>1</sup>	89.8	49.3	38	32
Ratio of care managers to practices in network	0.32	0.60	0.25	0.58

NOTES:

<sup>1</sup> Data from 2013.

CCNC = Community Care of North Carolina; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: Community Care of North Carolina (<https://www.communitycarenc.org/our-networks/>), accessed 7/24/2015.

As part of the MAPCP Demonstration, North Carolina established a multi-payer initiative that includes Medicaid, Medicare, the State Employee Health Plan, and Blue Cross Blue Shield of North Carolina (BCBSNC). North Carolina's initiative launched in October 2011, when BCBSNC and Medicare joined Medicaid in making additional payments to practices in seven rural counties across the state and four regional CCNC networks. The State Employee Health Plan, administered by BCBSNC, began making payments in January 2012.

**State environment.** North Carolina's initiative was a public-private partnership between the North Carolina Department of Health and Human Services Office of Rural Health and Community Care (NCDHHS/ORHCC), which provided executive leadership, and CCNC, which provided day-to-day operations management. Through a Memorandum of Agreement with NCDHHS/ORHCC, CCNC implemented the state initiative. A multi-stakeholder steering committee facilitated decision making among the participants.

North Carolina experienced major political changes at the beginning of 2013. A new governor, the first Republican in 20 years, took office in January. The leadership transition created significant staffing changes at both cabinet and department levels. A new Secretary of Health and Human Services was appointed, and the state Medicaid Director and Medicaid Medical Director left the Division of Medical Services in the second half of 2013. The State

Employee Health Plan also changed leadership, welcoming a new Executive Administrator in April 2013.

North Carolina also participated in several other initiatives with potential impact on outcomes for participants in the MAPCP Demonstration or the comparison group population:

- North Carolina received approval of a Section 2703 Health Home State Plan Amendment in May 2012, effective retroactively to October 1, 2011. The health home program relied on the CCNC infrastructure to deliver enhanced care to eligible Medicaid enrollees with chronic physical health conditions. The state's enhanced federal match expired October 1, 2013.
- North Carolina received an Infrastructure for Maintaining Primary Care Transformation (IMPACT) grant from the Agency for Healthcare Research and Quality (AHRQ) in 2011. Building on an Improving Performance in Practice program, this initiative supported state efforts to enhance primary care coaching and related methods to promote practice transformation.

**Demonstration scope.** The North Carolina initiative was limited to seven rural counties across the state: Ashe, Avery, Bladen, Columbus, Granville, Transylvania, and Watauga.

**Table 6-2** shows participation in North Carolina's MAPCP Demonstration at the end of its first and second years. North Carolina estimated that 61 practices would join the demonstration. The number of practices participating at the end of Year One (September 30, 2012) was 43; at the end of Year Two (September 30, 2013) the number had dropped to 42. The majority of these practices were small, with one or two full-time equivalent (FTE) providers. In contrast to the slight decrease in the number of participating practices, a result of practice mergers with larger healthcare systems, the number of providers increased by 9 percent, from 138 to 150. The number of providers grew because enrollment of new practices remained open until September 30, 2013. The cumulative number of Medicare FFS beneficiaries participating in the demonstration for at least 3 months was 26,438 at the end of the first year and 30,842 at the end of the second year—an increase of 17 percent.

In terms of all-payer participants, the state reported that the number of individuals linked to a PCMH (for the Medicaid population) or assigned to a PCMH by an attribution algorithm (for other payers) was 84,860 at the end of Year One and 83,301 at the end of Year Two. This was a decrease of 1,559 total participants (1.8%). The state estimated that it would reach 120,428 individuals by the end of Year Two.

The demonstration population included the Medicaid population enrolled with CCNC, Medicare FFS beneficiaries, BCBSNC underwritten members, and members of the State Employee Health Plan (administered by BCBSNC). The State Employee Health Plan expanded its relationship with CCNC beyond the seven MAPCP Demonstration counties. The Medicaid population included aged, blind, and disabled (ABD) individuals, including those who were dually eligible for Medicare.

**Table 6-2**  
**Number of practices, providers, and Medicare fee-for-service beneficiaries participating in the North Carolina MAPCP Demonstration**

Participating entities	Number as of September 30, 2012	Number as of September 30, 2013
MAPCP Demonstration practices <sup>1</sup>	43	42
Participating providers <sup>1</sup>	138	150
Medicare FFS beneficiaries <sup>2</sup>	26,438	30,842

NOTES:

- MAPCP Demonstration practices included only those practices with attributed Medicare FFS beneficiaries, and participating providers are the providers associated with those practices.
- The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries ever assigned to participating MAPCP Demonstration practices and that had participated in the demonstration for at least 3 months.

ARC = Actuarial Research Corporation; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCES: <sup>1</sup>ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

**Table 6-3** displays the characteristics of the practices with attributed Medicare FFS beneficiaries participating in the North Carolina MAPCP Demonstration as of September 30, 2013. There were 42 participating practices with an average of 4 providers per practice. They comprised office-based practices (71%), rural health clinics (RHCs) (19%), and critical access hospitals (CAHs) (10%). Most practices were located in rural areas (69%), with the remainder in micropolitan areas (31%).

**Table 6-3**  
**Characteristics of practices participating in the North Carolina MAPCP Demonstration as of September 30, 2013**

Characteristic	Number or percent
Number of practices (total)	42
Number of providers (total)	150
Number of providers per practice (average)	4
Practice type (%)	
Office-based practice	71
Federally qualified health center	0
Critical access hospital	10
Rural health clinic	19
Practice location type (%)	
Metropolitan	0
Micropolitan	31
Rural	69

ARC = Actuarial Research Corporation; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: ARC Q9 MAPCP Demonstration Provider File. (See Chapter 1 for more detail about this file.)

**Table 6-4** shows demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating MAPCP Demonstration practices during the first 2 years of the MAPCP Demonstration (October 1, 2011, to September 30, 2013). Beneficiaries with fewer than 3 months of eligibility for the demonstration were not included in our evaluation or this analysis. Of beneficiaries assigned to MAPCP Demonstration practices during the first 2 years of the demonstration, almost one-fifth (19%) were under the age of 65, almost half (49%) were between the ages of 65 and 75, and almost one-quarter were between the ages of 76 and 85, with a mean beneficiary age of 70 years. Eighty-one percent of beneficiaries were White; 1 percent were urban dwelling; and 58 percent were female. Twenty-six percent were dually eligible for Medicare and Medicaid, and 30 percent were originally eligible for Medicare because of a disability. One percent of beneficiaries had end-stage renal disease (ESRD) and less than 1 percent resided in a nursing home during the year before assignment to a demonstration practice.

**Table 6-4**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the North Carolina MAPCP Demonstration from October 1, 2011, through September 30, 2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	30,842
Demographic characteristics	
Age < 65 (%)	19
Ages 65–75 (%)	49
Ages 76–85 (%)	24
Age > 85 (%)	7
Mean age	70
White (%)	81
Urban place of residence (%)	1
Female (%)	58
Dual eligibles (%)	26
Disabled (%)	30
End-stage renal disease (%)	1
Institutionalized (%)	0
Health status	
Mean HCC score groups	1.03
Low risk (< 0.48) (%)	25
Medium risk (0.48–1.25) (%)	51
High risk (> 1.25) (%)	23
Mean Charlson Index score	0.80
Low Charlson Index score (= 0) (%)	62
Medium Charlson Index score ( $\leq 1$ ) (%)	20
High Charlson Index score (> 1) (%)	18

(continued)

**Table 6-4 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the North Carolina MAPCP Demonstration from October 1, 2011, through September 30, 2013**

<b>Demographic and health status characteristics</b>	<b>Percentage or mean</b>
Chronic conditions (%)	
Heart failure	5
Coronary artery disease	11
Other respiratory disease	10
Diabetes without complications	19
Diabetes with complications	3
Essential hypertension	38
Valve disorders	2
Cardiomyopathy	1
Acute and chronic renal disease	7
Renal failure	3
Peripheral vascular disease	2
Lipid metabolism disorders	20
Cardiac dysrhythmias and conduction disorders	10
Dementias	1
Strokes	1
Chest pain	5
Urinary tract infection	5
Anemia	7
Malaise and fatigue (including chronic fatigue syndrome)	4
Dizziness, syncope, and convulsions	5
Disorders of joint	8
Hypothyroidism	6

**NOTES:**

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to a patient-centered medical home after the start of the MAPCP Demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid.

HCC = Hierarchical Condition Category; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: Medicare claims files.

Using three different measures—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions—we describe beneficiaries' health status during the year before assignment to a MAPCP Demonstration practice. Beneficiaries had a mean HCC score of 1.03, meaning that they were predicted to be 3 percent sicker than an average Medicare FFS beneficiary, or 3 percent more costly, than an average Medicare FFS beneficiary during the year before their assignment to a demonstration practice. Sixty-two

percent of the beneficiaries had a low (zero) score on the Charlson Comorbidity Index, indicating that these beneficiaries did not receive medical care for any of the 18 clinical conditions in the index in the year before assignment to a participating demonstration practice.

The most common chronic conditions diagnosed among the Medicare FFS beneficiaries were hypertension (38%), lipid metabolism disorders (20%), diabetes without complications (19%), coronary artery disease (11%), other respiratory disease (10%), and cardiac dysrhythmias and conduction disorders (10%). Less than 10 percent of beneficiaries were treated for any of the other chronic conditions.

**Practice expectations.** North Carolina required participating practices to achieve National Committee for Quality Assurance (NCQA) Physician Practice Connections (PPC®) PCMH™ recognition within 12 months of joining the demonstration, a standard not required by CCNC before the start of the demonstration. Participating practices also had to be accepted into the BCBSNC Blue Quality Physician Program (BQPP) by the end of September 2013 with Level II or III scores. The BQPP is BCBSNC's PCMH program, which requires practices to achieve 2008 NCQA PPC® PCMH™ or 2011 NCQA PCMH™ recognition, use electronic prescribing, file claims electronically, complete cultural competency training, and provide expanded access to care.

In February 2013, BCBSNC removed some of the BQPP requirements for practices affiliated with large hospital systems, independent practice associations, or academic medical centers. Because those practices' existing contractual agreements already had a fee schedule similar to or greater than that of a BQPP Level III practice, they were precluded from receiving additional reimbursements upon achieving BQPP recognition. Hospital system practices completed the Physician Cultural Competency and Motivational Interviewing educational modules to meet BQPP requirements.

By September 30, 2013, 47 of the 49 participating practices had achieved NCQA recognition—18 at Level 1, 13 at Level 2, and 16 at Level 3. This was a marked improvement compared to September 2012 (when nearly a quarter of participating practices lacked recognition) and the start of the demonstration (when only one practice had achieved recognition). These 47 practices also were accepted into BQPP. The two practices that did not achieve recognition were granted extensions by all payers, because although the practices had submitted their applications, NCQA was unable to process them before the September 30 deadline.

**Support to practices.** North Carolina's PCMH initiative used a multifaceted payment system. Payments varied by payer, practice, and enrollee. Medicare and Medicaid both made PMPM payments to participating practices and regional networks, while BCBSNC made enhanced FFS payments to providers and PMPM payments to the regional networks. The State Employee Health Plan paid networks an annual lump sum based on a 1:40 ratio of FTE nurse care managers to high-risk members through a subcontract between their care management vendor (ActiveHealth) and CCNC. See **Table 6-5** for specific payment information.

The Medicaid PMPM payment varied by the beneficiary's eligibility category, with a higher payment for ABD beneficiaries. Medicaid continued making payments for dually eligible

beneficiaries attributed to a primary care provider in a participating practice, as it did before the MAPCP Demonstration. Medicare's PMPM practice payment varied by level of NCQA PPC® PCMH™ recognition. From October 1, 2011, to September 30, 2013, demonstration practices received a total of \$4,210,164 in Medicare MAPCP Demonstration payments.

The exact amount of the fee enhancement paid by BCBSNC is negotiated with each practice and is proprietary. According to BCBSNC, the fee enhancement is equivalent to a minimum of \$1.50 PMPM. A BCBSNC representative meets with providers every 6 months to confirm whether at least the minimum amount was paid.

**Table 6-5**  
**North Carolina MAPCP Demonstration payments**

<b>Payer</b>	<b>Practice PMPM payment</b>	<b>Network PMPM payment</b>
Medicaid	\$2.50—non-ABD \$5.00—ABD	\$3.72—non-ABD \$13.72—ABD
Medicare	\$2.50—Level 1 NCQA \$3.00—Level 2 NCQA \$3.50—Level 3 NCQA	\$6.50
Blue Cross Blue Shield of North Carolina	\$1.50 minimum <sup>1</sup>	\$2.50 <sup>1</sup>
State Employee Health Plan	\$1.50 minimum <sup>1</sup>	<sup>2</sup>

**NOTES:**

<sup>1</sup> PMPM equivalent of enhanced fee schedule as estimated by Blue Cross Blue Shield of North Carolina.

<sup>2</sup> For the State Employee Health Plan, networks are paid an annual lump sum based on a 1:40 ratio of full-time equivalent nurse care managers to high-risk members.

ABD = aged, blind, and disabled; MAPCP = Multi-Payer Advanced Primary Care Practice; NCQA = National Committee for Quality Assurance; PMPM = per member per month.

North Carolina primary care practices benefit from a strong provider support system, most notably with services provided through the regional CCNC networks. The participating networks identify high-risk Medicare and Medicaid patients from CCNC Informatics Center reports and provide care management and care coordination services for primary care practices within the network's service area. BCBSNC and the State Employee Health Plan developed protocols for their own nurse care managers to refer high-risk patients to CCNC as necessary and appropriate. In addition, CCNC network staff (including their nurse care managers and clinical pharmacists) help practices manage high-risk patients through education, medication reconciliation, and care coordination. Primary care practices also receive individualized support from quality improvement consultants employed by Area Health Education Centers, which are affiliated with the state's medical schools and also serve as federally designated Regional Extension Centers to promote the adoption of health information technology (health IT).

CCNC provides extensive data support for practices, nurse care managers, and clinical pharmacists through its Informatics Center reports site, the Case Management Information System (CMIS), and Pharmacy Home. The Pharmacy Home data system serves primary care providers and networks' clinical pharmacists and care managers by recording and aggregating patient information on drug use. The Informatics Center and CMIS support health assessment, disease management, health coaching, and workflow management. The Informatics Center

includes several reports that could be queried, including care gap alerts identifying individuals who have not received recommended services.

The Informatics Center also provides real-time hospital admissions data for Medicaid-enrolled patients and feedback reports aggregated at the patient, practice, county, and network levels. Uploading real-time Medicare data to the Informatics Center is not possible because Medicare claims are delivered monthly to CCNC. Practice and network staff can access the CCNC reports through an interface called the provider portal, although utilization of this portal varies across practices. Every CCNC practice has a set of reports available for Medicaid, while those participating in the MAPCP Demonstration had access to multi-payer patient data in the provider portal since January 2013. (The State Employee Health Plan does not submit data to CCNC because of a contract with their existing care management vendor, ActiveHealth.) CCNC also integrated the Medicare data into its own provider portal to centralize data for providers.

CMIS is an electronic case management information system populated with all-payer claims data and clinical information submitted by nurse care managers in counties covered by the MAPCP Demonstration. Care managers have been documenting their activities in CMIS since the inception of the state initiative. Integration of BCBSNC and Medicare claims data with other data sources was not achieved in CMIS until January 2003. CCNC developed guidelines for care managers using the CMIS, although standardized procedures were not available for all fields, so data entry may vary across networks.

The Pharmacy Home data system serves primary care providers and network clinical pharmacists and care managers by recording and aggregating patient information on drug use. It provides patient-level information on pharmacy claims and medication history for point-of-care activities; it also generates population-based reports to identify patients who might benefit from clinical pharmacy and care management services. The database includes descriptions of clinical pharmacists' activities and findings (identified drug interactions, expired medications, reconciled medications, suggested formulary, or recommendations for changes to lower cost medication). North Carolina worked to integrate the CMIS and Pharmacy Home systems more effectively in 2013.

To support self-management, CCNC developed a self-management notebook, received by patients upon hospital discharge, that includes provider notes, medication lists, appointment schedules, and educational materials. Network nurse care managers provide educational services and in-person outreach to patients with chronic conditions. Networks also connect patients with community-based services, including those offered by local health departments, community hospitals, Area Agencies on Aging, and Aging and Disability Resource Centers.

### **6.1.2 Logic Model**

*Figure 6-1* shows a logic model of North Carolina's MAPCP Demonstration. The first column describes the context for the demonstration, including its scope, other state and federal initiatives affecting the demonstration, and key features of the state context affecting the demonstration. The next two columns describe implementation of the MAPCP Demonstration, which incorporated several strategies to promote transformation of practices to PCMHs. These strategies were designed to (1) improve access to and coordination of care with Community Care

Network support; (2) increase quality of care and patient safety through care management and clinical pharmacy services; and (3) link patients with nurse care managers to improve patient engagement, self-management, and communication with their providers. Successful interventions were expected to promote more efficient utilization, including increased use of primary care services and reductions in emergency room (ER) visits, avoidable inpatient admissions, and readmissions. These changes in utilization patterns were expected to produce improved health outcomes (which could, in turn, reduce utilization), greater beneficiary satisfaction with care, changes in expenditures consistent with utilization changes, and reductions in total per capita expenditures, resulting in budget neutrality for Medicare and cost savings for Medicaid, BCBSNC, and the State Employee Health Plan.

### **6.1.3 Implementation**

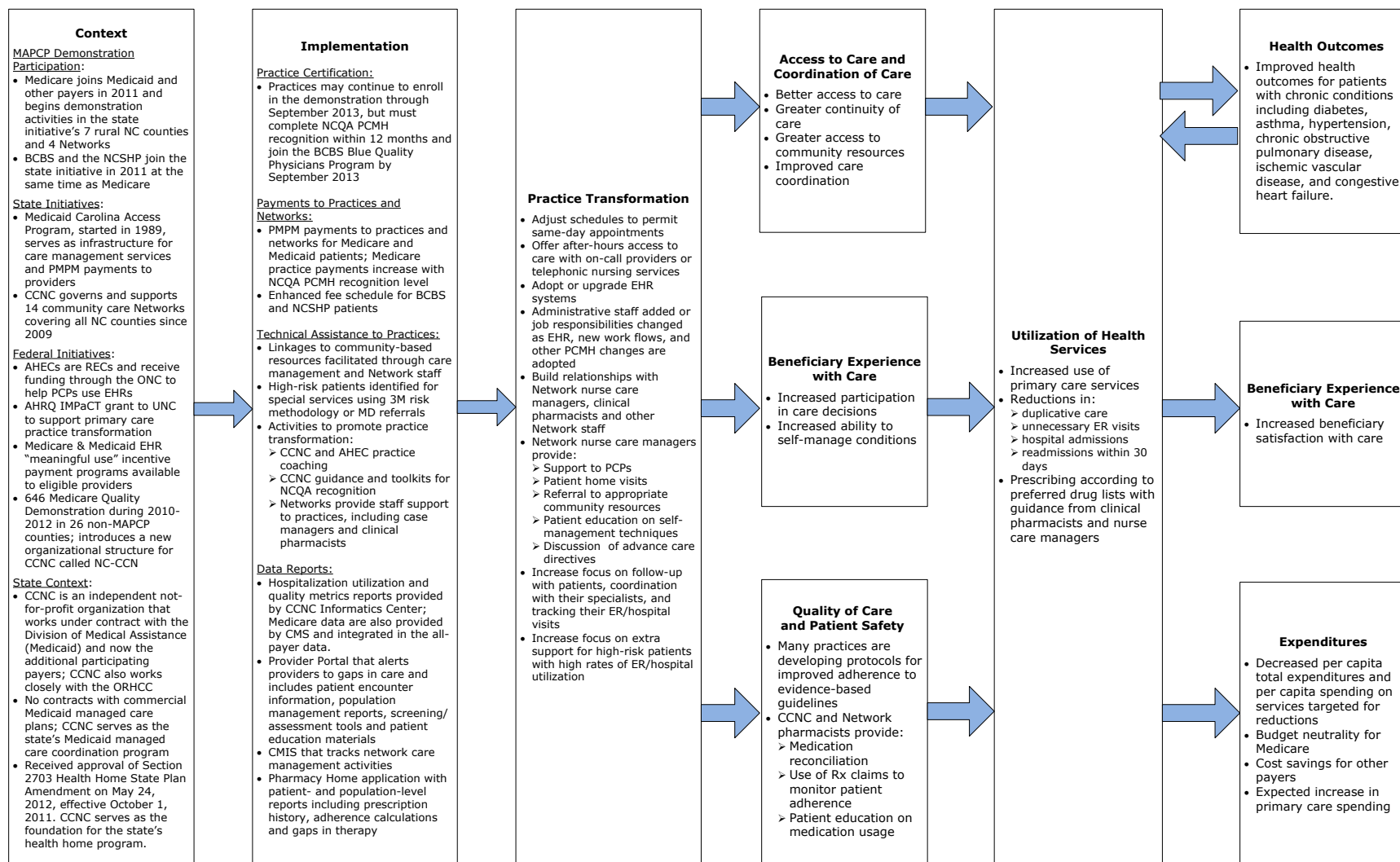
This section uses primary data gathered from the site visit to North Carolina in October 2013 and other sources to present key findings from the implementation experience of state officials, payers, and providers to address the evaluation questions described in *Section 6.1*.

#### **Major Changes During the Second Year**

**Changes in network contracts.** Although the regional networks' contract changed (regional networks now contract with CCNC instead of directly with the state), no major structural changes were reported by North Carolina interviewees during the 2013 site visit. The change in contracting did not have a noticeable impact on the multi-payer initiative. One CCNC official reported that the biggest change during the second year was that "most of the wrinkles have gotten out of the payment and the attribution has been steady."

**Meeting BQPP requirements.** Practices, networks, and CCNC staff all discussed an increased focus in the second year on helping practices meet BCBSNC's BQPP standards before the September 30, 2013, deadline. One network reported that the BQPP requirement did not have a big impact on their work, but another network reported difficulties with BCBSNC's role in helping practices meet standards because the payer took longer than expected to answer questions and process applications. Both networks acknowledged the difficulties practices had in finding time for physicians to complete the mandatory cultural competency training. BCBSNC's scoring rubric also created confusion for some network and practice staff, making it difficult for providers to determine which criteria they needed to focus on to earn a passing score. One network staff person observed that requiring practices to meet a second set of practice standards was burdensome, claiming, "If it hadn't been for [the problems with] NCTracks and BQPP, we would be a lot further along." (Problems with NCTracks are discussed in *Section 6.2*.)

**Figure 6-1**  
**Logic model for North Carolina MAPCP Demonstration**



BCBS: BlueCross BlueShield; PMPM: per member per month; CCNC: Community Care of North Carolina; CMIS: Case Management Information System; AHEC: Area Health Education Centers; REC: Regional Extension Centers; PCP: primary care provider; EHR: electronic health record; AHRQ: Agency for Healthcare Research and Quality; IMPaCT: Infrastructure for Maintaining Primary Care Transformation; ONC: Office of the National Coordinator for Health Information Technology; ORHCC: Office of Rural Health and Community Care; NC-CCN: North Carolina Community Care Networks; NCQA: National Committee for Quality Assurance; NCSHP: North Carolina State Health Plan; PCMH: patient-centered medical home; ER: emergency room; UNC: University of North Carolina

**Medicare Part D data.** Other reported changes were that Medicare Part D data are now available for participating dually eligible beneficiaries and that the data feeds were integrated into the Pharmacy Home. While this was seen as a welcome addition that provides networks and practices with important Care Alerts, one CCNC official reported that the data gap for Medicare-only beneficiaries was an ongoing concern.

## **Major Implementation Issues During the Second Year**

Overall, North Carolina practices, networks, and state/CCNC staff reported fewer implementation issues than in the first year of the initiative, citing significant progress on data and workflow issues. Many major issues over the past year were due to external factors not directly attributable to the multi-payer initiative and will be discussed later in this section. Still, interviewees identified a few challenges that remained unresolved.

**Serving the new population.** A CCNC official described Medicare as “fitting into our wheelhouse” because of previous work with dually eligible individuals. CCNC typically provides a lot of face-to-face time with their high-needs Medicaid and Medicare participants, but the CCNC official reported that the networks are still “trying to figure out the right mix [of telephonic and face-to-face services].” Similarly, one care manager felt that the increased caseload created challenges that would be mitigated with additional staff focused on social work services.

**Meeting practice PCMH deadlines.** Not all participating practices were able to meet the required NCQA and BQPP recognition requirements by September 30, 2013. Although some of those practices were able to remain in the initiative by submitting their applications to NCQA and BCBSNC before the deadline, others failed to submit in time. One network interviewee reported losing two practices, one small and one large: “It was kind of interesting because one practice was owned by a large corporate entity, and we were thinking the corporate entity would step in and help push it through, but that didn’t happen.”

**Attribution issues.** Interviewees representing networks, CCNC, and the state raised various issues about the Medicare attribution model. One network representative discussed how the complexity of the Medicare attribution requires staff to spend time reconciling payments instead of focusing on quality improvement activities.

## **External and Contextual Factors Affecting Implementation**

**New claims processing system.** North Carolina’s transition to a new claims processing system introduced significant Medicaid payment delays and data lags. On July 1, 2013, North Carolina transitioned from their legacy Medicaid Management Information System to NCTracks, which consolidated the claims processing systems for the various divisions within NCDHHS. Networks and practices described the transition as: “a real nightmare;” “a disaster;” “chaotic;” and “a huge waste of time.” Because of the transition, there have been no Medicaid data feeds into the CCNC Informatics Center and incomplete reimbursement to practices for Medicaid claims since July 2013. The transition to NCTracks was a distraction that affected practices’ ability to focus on quality improvement activities and the multi-payer initiative. For example, one practice said that the transition affected its ability to receive timely notifications of ER utilization; the practice also described delays for referrals requiring preauthorization.

**Change in political climate.** The shift in political power and staffing changes described in *Section 6.1.1* coincided with a controversial January 2013 Medicaid Performance Audit released by the State Auditor. The audit reported high administrative costs for the program's size and called into question the agency's budget forecasts (Wood, 2013).

Overall, most interviewees reported that the political climate and turnover within NCDHHS had been a distraction, but no interviewee believed that it affected the day-to-day operation of the initiative or the way participating practices and networks delivered care. Nevertheless, many interviewees believed that the political climate negatively affected the relationship between CCNC and the Medicaid agency. One said that there is "not as much sense of partnership with CCNC [as before]."

**Other ongoing initiatives.** CCNC's regional networks are mini-laboratories testing a variety of initiatives to improve care. Services provided to patients vary by network (both within and outside demonstration counties). Stakeholders discussed a range of concurrent pilots underway across the state, including initiatives within networks to test palliative care, opioid safety, and transitional care, among others. Networks learn from one another and share best practices, so work in these and other domains possibly could expand into the MAPCP Demonstration counties. Similarly, nonparticipating networks could implement initiatives like the MAPCP Demonstration for their Medicaid patients in other parts of the state.

**Evolving healthcare market.** A CCNC official and a state official both discussed how market factors may affect implementation over the next year. Specifically, North Carolina hospitals are aggressively acquiring primary care practices, driving provider consolidation. When a participating practice is bought or merges, it could affect its participation in the multi-payer initiative if the new ownership does not want to continue participation or if the practice becomes part of a system that has not achieved NCQA PPC® PCMH™ recognition or met BQPP standards. In fact, two practices left the MAPCP Demonstration on December 31, 2013, because of mergers. Hospitals are investing in additional care management staff to reduce readmissions and improve transitional care, which could duplicate services provided by CCNC network staff.

#### **6.1.4 Lessons Learned**

Several key lessons emerged during the second round of site visits:

**Demonstration timeline.** Lessons from the 2013 site visit had a common theme: states pursuing multi-payer PCMH initiatives should not underestimate the time and resources needed to launch and administer a demonstration of this magnitude. State and patient advocate interviewees noted that 3 years is not enough time to implement the initiative fully and show results; two state interviewees specifically recommended a 5-year timeline as more realistic than the MAPCP Demonstration's 3 years. One CCNC interviewee explained that because the first year is dedicated to putting structural processes in place, "You kind of don't get going until the second year, and then you're just getting familiar with the data and the demographics and the culture—and then all of a sudden, here we are in Year Three, and people are in this panic mode of 'What are we going to do when we don't have the resources anymore?'" A state official described the first year as being "consumed with contracts, lawyers, and audits."

**Demonstration effects.** The implementation timeline affects the availability of outcomes data. CCNC staff discussed how practices began the initiative at different starting points, with some practices transitioning faster than others, underscoring the importance of a timeline with adequate ramp-up time to show results. Two CCNC interviewees independently expressed concern that 3 years was not enough time to see “the needle move.” A third CCNC official suggested that focusing on rural counties may have reduced the effects of the initiative: “If I did it again, I would get a few counties that were not as underserved. The communities are too isolated for the positive impact to spread to their colleagues; if we did it in Wake County [Raleigh], the word would get out and everyone would want to participate.”

**Financial support for program oversight.** CCNC interviewees advised that other states pursuing a PCMH initiative should ensure that they have an adequate budget for program administration and oversight. CCNC’s central office was supported for previous years through the PMPM payments made to the regional networks, but one respondent still said, “It would have been wiser if, when [the application] went in, the group that worked on it had recognized we would need a little more resources here centrally.” Another interviewee said that the multi-payer initiative would have been impossible without the existing Medicaid infrastructure.

## **6.2 Practice Transformation**

This section seeks to answer evaluation research questions related to changes made by practices in Year Two to continue participating in the demonstration; technical assistance to practices; views on the payment model; and experiences with the demonstration in Year Two. For this report, we did not conduct any quantitative analyses, but relied on findings from our Year Two site visit and secondary data provided by the state to answer these research questions.

Practices prioritized achieving NCQA PPC® PCMH™ recognition, implementing electronic health records (EHRs) and other health IT tools, and utilizing network care management activities to meet the unique needs of the Medicare population in Year One of the MAPCP Demonstration. During Year Two, the practices largely focused on meeting requirements for the BCBSNC BQPP. The state initiative required that practices meet BQPP Level II or III criteria by September 30, 2013, to continue receiving BCBSNC enhanced fee reimbursement. Several practices simultaneously sought higher levels of NCQA PPC® PCMH™ recognition in Year Two. Other key changes in Year Two included improving or implementing EHRs and focusing network care management and clinical pharmacy services on transitional care. Practice and network staff also received frequent technical assistance for the BQPP process and CCNC health IT updates.

### **6.2.1 Changes Practices Made During Year Two**

Practices made several changes related to PCMH recognition and practice transformation, staffing changes, and health IT between the initial round of interviews in late 2012 and the second round in late 2013.

**PCMH recognition and practice transformation.** Before the MAPCP Demonstration, most participating practices did not have NCQA PPC® PCMH™ recognition. Each practice was

required to attain at least NCQA PPC® PCMH™ Level 1 recognition within one year of entering the demonstration. All practices (except two that entered the demonstration in Year Two) had achieved at least Level 1 recognition at the time of the 2013 site visit. Few practices had met BQPP requirements before the demonstration, and most submitted their applications in Year Two.

Given that the BQPP program largely score practices on the basis of NCQA PPC® PCMH™ recognition criteria, practices considered the BQPP process to be less intensive because they already had made many of the required changes in Year One to achieve NCQA PPC® PCMH™ recognition. Practices discussed electronic prescribing and completion of a physician-level continuing medical education (CME) course in cultural competency as two particularly challenging BQPP program requirements. The electronic prescribing requirement prompted several providers to adopt an EHR or enhance their current EHR with an appropriate prescribing software component. Several providers found the physician cultural competency course to be useful and interesting, but many said it was difficult to complete by the deadline because the course required a significant amount of personal time. Network staff noted that delays in provider completion of the course hindered the BQPP application submission for many practices.

Many practices considered their efforts to achieve BQPP and NCQA PPC® PCMH™ recognition as primarily putting processes in place to document things they were already doing before entering the demonstration. Several practices noted that a more streamlined approach for reporting would help reduce the amount of time needed to complete applications. Network staff also noted that practices “felt like they agreed to one thing and then were being nicked and dined to do more,” because the networks were underprepared during initial conversations with providers and unable to describe each payer’s requirements fully for participation in the state initiative.

Some practices incorporated what they learned from the BQPP and NCQA PPC® PCMH™ recognition processes into their daily workflow during Year Two. A few practices held regular team meetings every few weeks to discuss their PCMH activities and set future goals. Practices in one network began managing patients with chronic illnesses using flow sheets. A pediatric practice developed protocols in its EHR system for attention deficit disorder, asthma, and other chronic illnesses common to pediatrics, which prompted them to spend more time on patient education for these issues. Practices also noted that the new Medicare annual wellness exam provided a template for health maintenance issues that was helpful for organizing office visits.

Practices did not change their business hours since the 2012 site visits, when many already offered extended hours. One practice not yet offering extended hours reported that they planned to hire additional staff, allowing them to extend hours into evenings and weekends. One practice, however, stopped seeing patients on Fridays, so that staff could meet increasing paperwork demands from insurance companies. Many practices had or began to offer after-hours care through on-call providers from the practice or coverage by a telephonic nursing service. Two practices reorganized the workday to allow time in the mornings to work as a team on previsit planning activities for all patients coming in that day.

Few practices initiated quality improvement activities in Year Two, as BQPP and NCQA PPC® PCMH™ recognition remained the focus of their time and resources. One practice explained that quality improvement had “taken a back seat” because they were just starting to become comfortable with the EHR and using its data. Networks reported that practices were “completely overwhelmed” and “only looked at the reports they needed to get the PCMH recognition, because they were under such a tight timeline.” Some pediatric practices were more active in quality improvement and monitored vaccinations using processes developed for NCQA PPC® PCMH™ recognition.

Networks refocused their efforts on quality improvement at the time of the 2013 site visit in anticipation that practices would be ready to take on quality improvement activities as they concluded BQPP applications at the end of the year. Networks created internal quality improvement teams and developed a plan for implementing quality improvement activities in their region’s practices. The network quality improvement teams coordinated with CCNC’s Quality Improvement Facilitator and identified key practices for early-stage quality improvement activities. Using CCNC data available in the provider portal, they worked with several practices in Year Two to help each focus on a single measure to learn the quality improvement process.

Nurse care managers reported that they improved their relationship with providers and office staff in their assigned practices, which they considered to be “crucial” in effectively working as a team to manage patients. Some nurse care managers noted that they began to receive more direct patient referrals from practices. They also observed that they had more resources to offer Medicare patients after a year of experience working with them. One nurse care manager explained that having much better knowledge of community resources for the Medicare population was important in building relationships with those patients, because they “let [the patients] know what is available and let them know if they meet criteria, rather than just connecting them...so that they aren’t disappointed.”

Nurse care managers more heavily prioritized management of transitional care patients and prevention of admissions or readmissions in Year Two. With a wider range of available CCNC reports and the addition of Medicare and BCBSNC data in Year Two, network staff and nurse care managers agreed that the data were “more sophisticated,” allowing for better targeting of transitional care patients. As part of the new emphasis on transitional care, nurse care managers followed up directly with patients after hospital discharge and aimed to be the first point of contact for the patient. In Year Two, practices also emphasized having newly discharged patients come in for an office visit as soon as possible.

All networks employed a similar protocol for transitional care patient medication review. After a patient’s hospital discharge, a nurse care manager compiled the patient’s medication lists, drawing on information from the hospital, providers, and patient self-report. The nurse care manager then sent the lists to the network clinical pharmacist for review. The nurse care manager delivered the clinical pharmacist’s final medication reconciliation report to the patient’s primary care physician before the first post-discharge office visit. As of November 2013, CCNC required that medication reconciliation be performed within 15 days (rather than 30) after hospital discharge for patients with eight or more medications. Network staff, however, noted that this requirement had already been met in most cases before the new requirement was established.

**Practice staffing changes.** Several staffing changes occurred in both practices and networks during Year Two of the demonstration. Practice changes were made largely to accommodate further development of health IT and care coordination activities. Network staffing changes were made to increase capacity for supporting practices through care management and clinical pharmacy activities.

One practice reported hiring additional staff towards the end of Year Two to extend office hours to evenings and weekends. The same practice also hired a dedicated IT staff member and additional administrative staff to handle phone calls. In other practices, specific staff members took on the role of managing disease registries and the EHR system. Another practice in the process of hiring a nurse for previsit planning activities noted that they also wanted to hire two dedicated nurse care managers to augment network services, but currently lacked the funding.

One network hired additional nurse care managers to manage more patients in the demonstration counties. The network also shifted some staff workday hours so that they could contact employed patients after standard business hours. Another network increased its nurse care managers' caseloads from a minimum of 35 patients to a minimum of 60, which one nurse care manager called "overwhelming." The network also added a client services coordinator to receive patient census feeds from three local hospitals and identify Medicaid and Medicare patients who could benefit from transitional care management activities.

Two networks had embedded nurse care managers in some practices for a few days per week to work directly with providers and patients in Year Two. One practice transitioned three of its own nurses into internal care management roles to guarantee access to care management when the network nurse care manager was not available. Network and practice respondents noted that they would hire more nurse care managers to embed in practices if funds were available, but they currently did not have the resources to expand embedded care management. One network increased its clinical pharmacist's hours and further streamlined her activities in Year Two to focus on transitional care patients and prevention of readmissions. The clinical pharmacist also made a few home visits for difficult cases, at the care manager's request, and met with some patients at their local pharmacy or primary care physician's office in Year Two. A practice in another network reported receiving in-house support from a network clinical pharmacist as part of a network pilot for part of Year Two, but the pharmacy support unfortunately ended in July 2013. The network noted, however, that its clinical pharmacist continued to work directly with the nurse care managers and interact with some providers on a case-by-case basis.

**Health information technology.** Practices continued to dedicate a significant amount of time and resources during Year Two to developing their EHR systems and learning how to use them for PCMH activities. Practices without full-featured EHRs at the end of Year One began transitioning to an EHR for the first time to meet the BCBSNC BQPP electronic prescribing requirement. Network and practice staff noted that the demonstration was key in motivating reluctant providers to commit to transitioning their practice to an EHR system by providing some funds for the costly process.

Practices adopting EHR systems in Year Two reported many frustrations, but also noted that the system could help streamline patient care in the future. Of those practices with EHR

systems in Year One, many reported that they had not maximized use of their system in Year Two. Some practices owned by a larger health system used disease registry functions in their EHR system during Year Two, but few independent practices that we visited used electronic disease registries. One network worked with practices to enter structured data in the EHR. None of the practices was using its EHR system for quality improvement activities, although several began to pull data from their systems about patients with particular chronic illnesses.

Some practices transitioned to a different EHR system in Year Two to meet CMS “meaningful use” criteria or to add an electronic prescribing component. Almost all practices that we visited attested to “meaningful use,” and many of the remaining practices planned to do so in the near future upon completing the necessary IT improvements. One network staff member noted that CMS “meaningful use” criteria and the state initiative’s health IT requirements were synergistic in prompting practices to spend time on population management with the help of available health IT tools, despite many other demands on practice staff.

Several practices began to use patient portals through their EHR system in Year Two. Many providers noted that low levels of literacy and a lack of access to computers or an Internet connection in rural North Carolina were significant barriers to the broad use of patient portals. They said that the patient portal was very useful for interacting with those patients who were able to access it. Practices without patient portals at the time of the 2013 site visit planned to purchase and utilize them before the end of the demonstration.

To supplement practices’ EHR data, CCNC provided periodic reports on patients to practices through the provider portal. Three of the reports included all three payers’ data. Practices had direct access to all reports except the MAPCP Demonstration Utilization File and the MAPCP Demonstration Practice Feedback Report. The CCNC reports included

- ER utilization (Medicaid, Medicare, and BCBSNC);
- Inpatient utilization (Medicaid, Medicare, and BCBSNC);
- Care alerts/care gaps (Medicaid, Medicare, and BCBSNC);
- Attribution lists (BCBSNC and Medicare);
- Input authorization (BCBSNC);
- Priority patient lists (BCBSNC);
- Transitional care flagging (Medicare);
- Palliative care list (Medicare);
- MAPCP Demonstration Utilization File (Medicare); and
- MAPCP Demonstration Practice Feedback Report (Medicare).

Practice and network staff reported that problems with the new Medicaid payment system, NCTracks, had stalled Medicaid data feeds into CCNC's reporting infrastructure. At the time of the site visit, provider portal data for Medicaid had not been updated since NCTracks was launched. Network staff reported that their Medicaid population management activities were hindered significantly because Medicaid reports and care alerts were outdated.

After the incorporation of Medicare and BCBSNC data into CCNC reports in Year Two, networks used CCNC data in the process of assigning nurse care managers to patients. Once the nurse care managers in one network completed tasks with transitional care patients each week, the network's client services coordinator used the priority report to identify additional patients for care management services. Network staff noted that the additional reports gave them "more opportunities" to affect patients.

Another crucial aspect of health IT in the North Carolina initiative was use of the CMIS, CCNC's dedicated online Web portal for nurse care managers. Nurse care managers reported a high level of comfort in using the CMIS in Year Two. Practices did not have access to CMIS, but were provided useful data on specific patients through the nurse care managers when appropriate. Through CMIS, nurse care managers also can access the provider portal and CCNC Informatics Center to gather patient data. A care manager noted that not every Medicare patient's data is in the provider portal, and they often have to use the Informatics Center to find additional information.

Nurse care managers noted that the Medicare data would be more helpful if it were more current and that they were not as complete as Medicaid data. They found the multi-payer care alerts/care gaps very useful in following up with patients who had not received health care services recommended for their condition (for example, clinical quality process measures or follow-up after hospitalization). Two care managers from one network also used the MAPCP Demonstration Utilization File to gather additional data to "get a really good picture" of high-utilizing patients and "fine-tune the [patient] assessment." Few nurse care managers had access to practices' EHR systems, but one reported that several of her assigned practices were working to grant her access in the near future. Nurse care managers in one network began using a health information exchange through a local hospital in Year Two. They also noted that more hospitals sent daily ADT [Admission-Discharge-Transfer] feeds to CCNC during Year Two, which assisted in gathering data for transitional care activities.

Pharmacy Home and CMIS were integrated in September 2013, allowing for more fluid coordination between nurse care manager and clinical pharmacist for medication reconciliation. A clinical pharmacist reported a shift towards clinical pharmacists primarily using Pharmacy Home, although they currently also used CMIS and the provider portal frequently, because Pharmacy Home was limited to medication claims data. While nurse care managers previously completed medication reconciliation forms by hand and uploaded them to CMIS, they began using Pharmacy Home for their medication reconciliation tasks in Year Two. Both a clinical pharmacist and several nurse care managers reported that Pharmacy Home improved in Year Two, noting that the integration of systems would help reduce redundant documentation.

Practices generally used the provider portal very little in Year Two. Many practices reported that they did not have time to check the portal, although they said that it contained

useful, well-organized data. One provider said that it would be helpful to have a staff member dedicated to monitoring CCNC data if resources were available. Some practice office managers reported that they began using CCNC care alerts in the provider portal to monitor patient preventive screenings or to address care gaps, particularly when prompted to do so by network staff. One office manager noted that she found the provider portal useful for checking patients' medication fill history.

Despite advancements in health IT in Year Two, practices still communicated with each other, specialists, and hospitals by fax or phone. Practices noted that the delay in communication with specialists was often a barrier in caring for a patient. Many practice and network staff expressed a need for the health information exchange to overcome compatibility issues among the many different EHR systems in practices and hospitals across the state.

### **6.2.2 Technical Assistance**

Technical assistance is an important component in achieving the goals of the North Carolina multi-payer initiative. CCNC and local networks provided considerable technical assistance to practices as they engaged in the BCBSNC BQPP and NCQA PPC® PCMH™ recognition processes in Year Two. Practices in both networks reached out to network staff with concerns, and practice staff interviewed during the 2013 site visit were satisfied with their network's ability to help solve problems. One practice staff member explained that the network support was "a really big help" in keeping practices aware of the data and on target with PCMH requirements.

In Year One, one network organized a practicum for undergraduate health care management students to assist with the NCQA recognition process and augment network support to practices. This internship evolved in Year Two with the addition of a student supervisor for the interns and reassignment of several interns to BQPP or quality improvement planning activities. One student dedicated to the BQPP process developed a progress-tracking tool and training video used by the practices. One practice in this network called their student intern "invaluable" and said that they could not have achieved PCMH recognition without the student's help.

The same network also hired a Quality Improvement Specialist in April 2013 to develop a model for quality improvement activities. The Quality Improvement Specialist became a certified NCQA PPC® PCMH™ Content Expert and works closely with the undergraduate interns. One practice reported receiving support from the network's Quality Improvement Specialist and a student intern in contacting and surveying the practice's high ER utilizers. In accordance with the CCNC quality improvement initiative, the other networks also formed quality improvement teams to prepare for Year Three quality improvement activities. A hospital system in another network also hired an internal practice-level Quality Improvement Specialist who generated quality reports and met with providers monthly for plan-do-study-act activities.

Practices said that they received training and frequent reminders for using the CCNC provider portal and its reports. The two networks we visited in Year Two discussed CCNC reports and progress with quality measures directly with practices. Two providers attended network meetings on topics including chronic pain management and pulling reports from

CCNC's provider portal. Both noted that they would like to attend more in the future and become more interactive with network staff.

CCNC provided in-person training and webinars to all network staff when provider portal and Pharmacy Home enhancements went live in January 2013. CCNC and its networks also provided training to care managers throughout Year Two to familiarize them with the system upgrades and new forms of task documentation. Nurse care managers noted that they attended multiple trainings on the use of the new CCNC reports and care alerts introduced in Year Two.

Several practice staff reported a need for more flexible training offerings specific to health IT. An office manager noted that the provider portal was "hard to understand" and that, although she contacted network staff with questions, she needed more help. Another office manager attended training sessions on pulling reports from the provider portal, but thought that network meetings sometimes were "too frequent" for practice staff with very limited time.

### **6.2.3 Payment Support**

No changes were made to practice payment mechanisms during Year Two. Several practices reported, however, that the federal government budget sequestration in 2013 reduced Medicare PMPM payments by 2 percent. While some practices reconsidered their participation in the demonstration, none dropped out as a result of the Medicare payment reduction. In both Years One and Two, providers considered the BCBSNC enhanced fee schedule to be "the program that most rewards the doctor for the additional time commitment for meeting criteria."

Practices reported that they put payments into the general practice receipts and did not use them for particular investments. Many practices noted that the payments helped with investing in, updating, or switching to a new EHR system. All practices viewed the EHR as a costly PCMH feature for which the payments are very important. One practice said that the payment helped pay the salary of an IT staff member dedicated to managing the EHR. Several practices reported using the payments to hire more administrative and nursing staff or to maintain their current staff.

Overall, respondents reported few problems with Medicare payments. When practices brought payment issues to the local network's attention, network staff helped practice managers secure payments and correct payment errors. One network assisted a practice that had not received any Medicare payments and reported that the issue was resolved "fairly quickly." Some practice managers and network staff reported that they continued to struggle in Year Two with tracking Medicare attribution and payments because of the complexity of the model and inconsistencies in payment timing. One practice manager also said that they would prefer to be paid a monthly lump sum by Medicare rather than in small PMPM increments, which "has been a source of frustration" for administrative staff.

Practice and network staff unanimously reported significant, ongoing Medicaid payment issues associated with the new Medicaid payment system, NCTracks, after it was launched in Year Two. All practice staff interviewed during the site visit reported receiving incomplete or no Medicaid payment on claims since the NCTracks rollout. Site visit interviewees said that taxonomy code issues and problems in affiliating providers with the correct practices were the most common causes of delays in Medicaid payments through NCTracks. Network and practice

staff spent a significant amount of time working to resolve the payment issues with NCTracks. All practice and network respondents considered the NCTracks transition to be a major barrier to state initiative progress, as it redirected practice resources away from initiative-related activities throughout the latter part of Year Two.

Practice and network staff reported that the lack of payment for the Medicaid population because of NCTracks system malfunctions severely affected practices' finances. All practices still remained open and accepted Medicaid patients. One solo provider used personal retirement accounts to remain open and pay his staff during a 2-month period without any Medicaid payments. One practice said that payments from BCBSNC and Medicare had been helpful when Medicaid payments disappeared.

Network and practice respondents emphasized an important difference in payment mechanisms for independent practices versus practices owned by health systems. A network staff member explained that payments to a practice owned by a health system go directly to the system's corporate-level management, not to the providers. The staff member noted that payment incentives work best in larger, independently owned practices because they receive a "significant amount of payment" from the attribution of Medicare patients "and that money is going right to them." A physician from a practice owned by a health system reported that the practice was not seeing any of the MAPCP Demonstration payment and was concerned that the funds were not "getting back down to the practice level where they need to be."

#### **6.2.4 Discussion of Practice Transformation**

Practice and network staff spent most of Year Two focusing on BCBSNC BQPP recognition. Some practices also progressed to higher levels of NCQA PPC® PCMH™ recognition. As the BQPP program largely scores practices on the basis of NCQA PPC® PCMH™ recognition criteria, practices had to make fewer changes overall in Year Two because most already had achieved at least NCQA PPC® PCMH™ Level 1 recognition in Year One. As part of the BQPP recognition process, practices adopted or improved EHRs, implemented electronic prescribing, and completed physician-level CME courses in cultural competency. Networks also expanded transitional care management and clinical pharmacy services during Year Two.

Technical problems with the new Medicaid payment system, NCTracks, affected both Medicaid payments to practices and Medicaid data feeds since the system's statewide launch in July 2013. Practice and network staff reported that the Medicaid payment delays significantly undermined practice financial stability and also drained staff time as they worked to identify and fix system issues.

Many practices continued to struggle with maximizing use of their EHRs and the CCNC provider portal. Many practices that adopted or upgraded EHRs, however, reported that they could see how the system would improve care in the future because it could be a tool for population management. Few practices used the provider portal reports or care alerts, although the networks aimed to begin working with practices to engage in quality improvement activities using these tools early in Year Three.

Networks expanded their care management staff and experienced better relationships with practices in Year Two. With the availability of CCNC reports for all payers in Year Two, care managers and clinical pharmacists were able to target patients more effectively for their services. One network hired additional nurse care managers to be able to manage more patients in the demonstration counties. The network also shifted work hours for some staff to enable them to contact employed patients after standard business hours. Another network increased its nurse care managers' caseloads from a minimum of 35 patients to a minimum of 60.

Practice staff overall reported that the demonstration's financial support continued to help with medical home investments like EHRs and additional staffing. Many practices noted that their involvement in the state initiative was costly, time-consuming, and challenging, and that the additional payer incentives were a key motivation for investing in PCMH transformation.

### **6.3 Quality of Care, Patient Safety, and Health Outcomes**

#### **6.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

During the first year of the MAPCP Demonstration, quality of care and patient safety interventions in North Carolina focused on management of chronic conditions, preventive care services, medication safety and fall prevention, prevention of ER visits and hospital readmissions, operational interventions, and measures such as outreach and patient engagement. During the second year, care managers implemented many of the same quality of care and patient safety interventions on which they focused during the first year, but the interventions were enhanced by the availability of better CCNC data for all payers.

Practices and networks reported that, during the first year of the demonstration, their main goal was getting through NCQA PPC® PCMH™ recognition. Practices worked to achieve BCBSNC BQPP recognition in Year Two. Once PCMH recognition processes were completed near the end of Year Two, the networks focused on planning for coordinating quality improvement efforts across practices.

Network respondents reported that, during the second year, practices took on small quality improvement activities and implemented policies and procedures throughout their practice for the purposes of achieving NCQA PPC® PCMH™ and BQPP recognition. Network quality improvement teams drafted plans for quality improvement activities in Year Three, aimed initially at using the care alerts from the provider portal that crossed over all payers. Some practices looked into the care alerts produced for every practice across all payers to identify patient care needs.

Three networks worked on palliative care initiatives still in the planning stages at the end of Year Two. One network reached out to two local hospice organizations to discuss implementing a local palliative care pilot for which the network received additional CCNC funding. Another network identified three assisted living facilities for partnership in a palliative care pilot aimed at identifying and documenting residents' wishes so that "they won't end up going back and forth into the hospital because it's not what they would have wanted." CCNC worked with a third network on a palliative care pilot structured around partnerships with both the local hospital and a hospice program. CCNC created lists of beneficiaries who might be

interested in palliative care for the network’s care managers to use in deciding which patients to approach about palliative care services.

Care managers continued to improve patient safety on several fronts in the past year. One important aspect of patient safety was medication reconciliation. Many practices reported that care managers did medication reconciliation at every patient visit. Network pharmacists are actively engaged with care managers and complete medication reviews for all transitional care patients, in addition to other high-priority patients with chronic illness. Clinical pharmacists also collaborate with local hospitals on medication reconciliation for admitted patients. One practice reported that care managers enter notes in the EHR to enable the primary care provider to address medication issues during the patient’s next visit. Care managers in one network work with durable medical equipment providers to help patients with possible safety issues (for example, portable oxygen tank), reducing the need for in-home services. One physician in a network reported that he used care managers and network pharmacists more in Year Two than he did in the first year of the demonstration. He said he is much more diligent about medication reconciliation and sees less confusion about medication among patients.

One practice described an example of using technology to identify gaps in recommended health services, which resulted in a dramatic increase in their immunization rates. A medical office assistant in the practice spends most of her time running reports to identify patients needing immunizations and contacting patients with gaps in their immunization record. This practice realized during the past year that, in using technology, gaps in recommended health services could be identified and addressed.

### **6.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes**

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization measures. Results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in **Section 6.3.3**.

**Process of care measures.** *Table 6-6* reports covariate-adjusted differences in several process measures indicating quality of care across the MAPCP Demonstration practices and two comparison groups: PCMHs and non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures addressing whether beneficiaries received all four of the recommended actions in diabetes care or none of the quality actions, respectively. The last indicator on whether a beneficiary received a total lipid panel follows the care guidance for patients with ischemic vascular disease (IVD).

We examine the probability of receiving the recommended services. These dichotomous (i.e., yes/no) indicators are modeled using logistic regression models. Estimates in *Table 6-6* are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. MAPCP Demonstration beneficiaries are expected to have more positive values for all indicators, except the “none” indicator in diabetes care.

**Table 6-6**  
**North Carolina: Comparison of average change estimates for**  
**process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 5,754)	0.97	[-0.40, 2.34]	1.79*	[0.80, 2.79]
Year Two (N = 3,821)	1.94*	[0.43, 3.45]	1.12	[-0.01, 2.24]
Overall (N = 6,071)	1.36*	[0.45, 2.26]	1.52*	[0.66, 2.39]
Retinal eye examination				
Year One (N = 5,754)	-2.93*	[-5.59, -0.28]	-1.60	[-3.73, 0.54]
Year Two (N = 3,821)	1.57	[-3.34, 6.48]	1.23	[-1.45, 3.91]
Overall (N = 6,071)	-1.14	[-3.67, 1.39]	-0.47	[-2.52, 1.57]
LDL-C screening				
Year One (N = 5,754)	2.17	[-1.50, 5.85]	1.15	[-0.48, 2.79]
Year Two (N = 3,821)	2.70	[-1.55, 6.96]	1.16	[-0.96, 3.28]
Overall (N = 6,071)	2.38	[-1.38, 6.14]	1.16	[-0.52, 2.83]
Medical attention for nephropathy				
Year One (N = 5,754)	2.00	[-3.87, 7.86]	0.50	[-4.72, 5.72]
Year Two (N = 3,821)	5.71	[-0.63, 12.04]	3.30	[-2.41, 9.01]
Overall (N = 6,071)	3.47	[-2.12, 9.06]	1.61	[-3.42, 6.64]
Received all 4 diabetes tests				
Year One (N = 5,754)	-1.95	[-6.97, 3.06]	-1.74	[-5.50, 2.03]
Year Two (N = 3,821)	5.18*	[0.76, 9.61]	2.13	[-2.81, 7.07]
Overall (N = 6,071)	0.88	[-3.40, 5.17]	-0.20	[-4.06, 3.66]

(continued)

**Table 6-6 (continued)**  
**North Carolina: Comparison of average change estimates for**  
**process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Received none of the 4 diabetes tests				
Year One (N = 5,754)	-0.46	[-1.35, 0.43]	-0.65*	[-1.11, -0.18]
Year Two (N = 3,821)	-0.99*	[-1.78, -0.20]	-0.70*	[-1.24, -0.17]
Overall (N = 6,071)	-0.67*	[-1.22, -0.12]	-0.67*	[-1.08, -0.25]
Total lipid panel				
Year One (N = 7,348)	3.37	[-1.82, 8.55]	1.41	[-0.60, 3.42]
Year Two (N = 5,144)	1.40	[-4.39, 7.18]	2.61*	[0.20, 5.03]
Overall (N = 8,387)	2.56	[-2.68, 7.81]	1.90	[-0.16, 3.97]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique North Carolina MAPCP Demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the likelihood that MAPCP Demonstration beneficiaries received **HbA1c testing** by 1.36 percentage points.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the likelihood that MAPCP Demonstration beneficiaries received **HbA1c testing** by 1.52 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimate suggests a positive trend toward receiving **all four diabetes tests**, though at this time the overall estimate is not statistically significant.
- When using both beneficiaries assigned to both PCMH and non-PCMH practices as comparison groups, the overall estimates indicate that the NC MAPCP Demonstration

is associated with a decrease in the likelihood that MAPCP Demonstration beneficiaries received **none of the four diabetes tests** by 0.67 percentage points.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a positive trend toward receiving a **total lipid panel test**, though at this time the overall estimate is not statistically significant.

**Preventable hospitalization measures.** Aside from studying processes of care, which are largely based on evidence-based guidelines, we also evaluated patient outcomes among MAPCP Demonstration practices and comparison practices. Some patient medical events, such as those measured with Prevention Quality Indicators (PQIs), may be preventable with adequate access to high-quality primary care services. We defined avoidable catastrophic events as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, chronic obstructive pulmonary disease (COPD) or asthma in older adults, asthma in younger adults, hypertension, and congestive heart failure. The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 6-7** reports covariate-adjusted differences in these patient outcome measures.

We examine differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters in **Table 6-7**. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improvements in the quality and access to ambulatory care, we expect demonstration beneficiaries to have a reduction (i.e., a significant negative value) in the rate of these avoidable hospitalizations.

**Table 6-7**  
**North Carolina: Comparison of average change estimates for**  
**health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 26,472)	-0.34	[-1.44, 0.76]	-0.07	[-0.86, 0.72]
Year Two (N = 27,808)	-0.66	[-1.79, 0.46]	-0.90*	[-1.74, -0.07]
Overall (N = 30,836)	-0.51	[-1.47, 0.45]	-0.52	[-1.17, 0.14]
PQI admissions—overall <sup>2</sup>				
Year One (N = 26,472)	-0.36	[-3.13, 2.41]	-0.23	[-1.57, 1.11]
Year Two (N = 27,808)	1.11	[-1.53, 3.76]	1.18	[-0.60, 2.95]
Overall (N = 30,836)	0.43	[-2.11, 2.96]	0.52	[-0.81, 1.86]
PQI admissions—acute <sup>3</sup>				
Year One (N = 26,472)	0.00	[-1.37, 1.36]	0.51	[-0.22, 1.25]
Year Two (N = 27,808)	0.48	[-0.95, 1.90]	1.17*	[0.17, 2.17]
Overall (N = 30,836)	0.25	[-1.02, 1.53]	0.87*	[0.12, 1.61]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 26,472)	-0.38	[-2.10, 1.34]	-0.64	[-1.41, 0.12]
Year Two (N = 27,808)	0.50	[-1.05, 2.04]	0.02	[-0.87, 0.91]
Overall (N = 30,836)	0.09	[-1.30, 1.49]	-0.29	[-0.97, 0.40]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique NC MAPCP Demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend towards decreasing the rate of **avoidable catastrophic events** among demonstration beneficiaries, though at this time the overall estimate is not statistically significant.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the overall estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **acute PQI admissions** among demonstration beneficiaries by 0.87 per 1,000 beneficiary quarters.

### 6.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes

The quantitative analyses shown above rely on Medicare administrative claims data. Across the quality indicators, there were few statistically significant findings when comparing MAPCP Demonstration practices to the comparison groups. Nonetheless, the positive coefficients across many of the process of care measures suggest that MAPCP Demonstration practices were trending towards higher probability of patients' receiving the recommended care relative to patients in the comparison group practices.

We observed a statistically significant increase in the likelihood of MAPCP Demonstration beneficiaries with diabetes receiving an HbA1c screening compared to both PCMH and non-PCMH comparison group practices. Overall changes in the probability of receiving retinal eye examination, LDL-C screening, medical attention for nephropathy, all four diabetes tests, and total lipid panel screening were not statistically different relative to beneficiaries assigned to PCMH and non-PCMH practices. The increases in likelihood of HbA1c screening and decreases in the likelihood of receiving none of the four diabetes tests are consistent with findings from our interviews with practice and network staff. They noted that they continued to work on improving their preventive screening rates, particularly among beneficiaries with chronic conditions like diabetes. These activities began in Year One, but practice and network staff reported that improved use of EHR and CCNC Informatics Center data in Year Two was associated with better identification of care gaps for targeted intervention. Practices continued to struggle with using their EHRs for monitoring population health measures, so that improvement in some screening rates may have lagged.

There was no evidence that the MAPCP Demonstration was associated with a reduction in preventable hospitalization outcomes for the beneficiaries. During the Year Two site visit, network and practice staff reported little or no evidence of success in improving hospitalizations. Many interviewees were concerned that any positive impacts of care management and other PCMH activities would not appear in analyses until after the demonstration period. One network staff interviewee said that he had observed slightly higher utilization patterns overall in the past year and was concerned that a small number of patients were skewing the data. Some practice staff described limitations in communications with hospitals about admissions, although many practice staff reported that practice, network, and hospital staff were working to improve communication and coordination. A trend toward reducing the rate of avoidable catastrophic events in Year Two was statistically significant relative to the non-PCMH comparison group and highlights the importance of continuing to evaluate these outcomes over time.

## **6.4 Access to Care and Coordination of Care**

### **6.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two**

Most practices reported that little had changed in terms of access to primary care during the second year of the demonstration. Part of the requirement for NCQA PPC<sup>®</sup> PCMH<sup>™</sup> recognition included expanded hours, and, for the most part, practices already had extended hours in place in Year One. At least one practice noted they regularly offer same-day appointments, whether for acute or preventive care, which they did not do before the demonstration. In addition, many practices offered after-hours access to medical advice for their patients by having providers rotate on-call duty, or by using a telephonic nurse triage service.

A practice in one network noted that there had been enhancements in access to specialty care during the second demonstration year, particularly in behavioral health resources for Medicare beneficiaries, because a few new counselors were accepting Medicare patients. This improved access, however, did not extend to Medicaid patients. The change in the state's political climate since the 2012 site visit, coupled with leadership changes in the Medicaid agency, somewhat damaged the reputation for Medicaid and behavioral health services in North Carolina.

Care coordination remained a major focus during the second demonstration year. During the Year One site visits, networks and practices reported that Medicare per beneficiary per month (PBP) payments had allowed them to hire more care managers and other care coordination staff. These staff are responsible for scheduling appointments with other physicians, arranging transportation, seeing patients in the hospital when they are admitted, and creating postdischarge care plans. Networks reported that this type of coordination continued during the second demonstration year. Staff members at CCNC and at the networks reported that the new care alerts available on the CCNC Informatics Center site helped identify patients to be contacted for missed care opportunities. The care alerts flag patients potentially at risk for repeated hospitalizations, gaps in quality measures, and possible need for care transitions. Network staff generally receive the care alerts and then meet with practice staff to help them navigate the alerts and identify patients with the greatest need for immediate care management. Care managers in one network also helped practices to attend to the care alerts during the second demonstration year by occasionally giving them memos showing what care was due for patients.

One network staff member reported that after practices completed the NCQA PPC<sup>®</sup> PCMH<sup>™</sup> recognition process and developed some data awareness, the network strengthened and nurtured its relationship with the practices, a result of one-on-one interactions in providing the care alerts and other reminders. Care managers also noted that their relationships with practices improved, and providers recognized that they could refer Medicare and Medicaid patients directly for care management services.

Practices and networks continued to focus on keeping patients out of the hospital and out of the ER for nonemergency care. Part of this effort was creating a 'cultural shift' in regions where it is the norm to go to the ER for health care. This was particularly difficult in one network where beneficiaries traditionally went directly to the ER for any type of health care. Staff in this network also focused on care transitions and high-priority patients (i.e., patients flagged as needing follow-up after a hospital discharge or as being at high risk for readmission). Network

staff reported that, as a result of efforts to educate these high-priority patients about the need to come to their regular doctor's office for most of their care, these patients developed more effective relationships with the doctors and the practice staff.

#### **6.4.2 Changes in Access to Care and Coordination of Care**

Our evaluation of the MAPCP Demonstration and access to and coordination of care addresses whether the MAPCP Demonstration was associated with changes in the utilization of primary care services and specialist services, and with enhanced coordination of care for Medicare beneficiaries. **Table 6-8** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across demonstration practices and two comparison groups: PCMHs and non-PCMHs. Results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 6.4.3**.

The first four measures address utilization of primary care and specialist services. Demonstration beneficiaries are expected to increase their utilization of primary care services and decrease their utilization of specialist services relative to comparison group beneficiaries after the start of the demonstration. We look at the quarterly rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall visit rate, for example if the demonstration is associated with reductions in both primary care and specialist visit rates, we also analyzed the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. A higher percentage indicates greater use of primary care services relative to specialist services. Demonstration beneficiaries are expected to have higher percentages of primary care visits.

We analyzed two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. The MAPCP Demonstration is expected to increase the follow-up visit rate and reduce the unplanned readmission rate.

Finally, we assessed continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plans. The value of the continuity of care index, which is measured annually, ranges from 0 to 1. MAPCP Demonstration beneficiaries are expected to have higher values on the continuity of care index.

With the exception of primary care visits as a percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.

**Table 6-8**  
**North Carolina: Comparison of average change estimates for access to care and**  
**coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 26,472)	-22.03	[-122.50, 78.43]	8.26	[-91.20, 107.71]
Year Two (N = 27,808)	-27.83	[-117.45, 61.80]	-15.25	[-114.55, 84.05]
Overall (N = 30,836)	-25.14	[-117.56, 67.29]	-4.33	[-102.72, 94.06]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 26,472)	-23.15	[-68.84, 22.54]	-13.70	[-39.35, 11.96]
Year Two (N = 27,808)	-7.41	[-44.01, 29.18]	-25.36*	[-49.90, -0.82]
Overall (N = 30,836)	-14.73	[-53.93, 24.48]	-19.94	[-43.30, 3.41]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 26,472)	19.23*	[3.36, 35.11]	24.07*	[8.94, 39.21]
Year Two (N = 27,808)	23.77*	[5.03, 42.51]	30.13*	[13.09, 47.18]
Overall (N = 30,836)	21.67*	[5.42, 37.91]	27.32*	[11.82, 42.81]

(continued)

**Table 6-8 (continued)**  
**North Carolina: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

<b>Outcome</b>	<b>North Carolina MAPCP Demonstration vs. CG PCMHs</b>		<b>North Carolina MAPCP Demonstration vs. CG non-PCMHs</b>	
	<b>Average estimate</b>	<b>90% confidence interval</b>	<b>Average estimate</b>	<b>90% confidence interval</b>
Primary care visits as a percentage of total visits (higher quintile = larger percentage) Year One (N = 22,696)	-0.17	[-2.77, 2.42]	-0.65	[-3.35, 2.06]
1st quintile				
5th quintile	0.14	[-1.92, 2.19]	0.47	[-1.57, 2.51]
Year Two (N = 17,199)	-1.55	[-4.01, 0.90]	-0.37	[-3.07, 2.34]
1st quintile				
5th quintile	1.17	[-0.70, 3.04]	0.27	[-1.75, 2.29]
Overall (N = 24,442)	-0.76	[-3.20, 1.68]	-0.53	[-3.16, 2.10]
1st quintile				
5th quintile	0.58	[-1.32, 2.48]	0.39	[-1.59, 2.36]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge) Year One (N = 3,492)	-29.92	[-94.42, 34.59]	0.27	[-32.10, 32.64]
Year Two (N = 3,688)	3.59	[-53.81, 60.99]	12.04	[-22.72, 46.80]
Overall (N = 6,268)	-12.62	[-66.56, 41.32]	6.35	[-21.78, 34.47]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge) Year One (N = 4,243)	-6.33	[-36.35, 23.68]	13.47	[-1.86, 28.81]
Year Two (N = 4,502)	12.18	[-16.23, 40.59]	3.05	[-14.41, 20.52]
Overall (N = 7,478)	3.25	[-20.73, 27.22]	8.08	[-5.00, 21.17]

(continued)

**Table 6-8 (continued)**  
**North Carolina: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care index (higher quintile = better continuity of care) Year One (N = 26,871) 1st quintile	0.33	[-1.09, 1.76]	-0.39	[-1.47, 0.68]
5th quintile	-0.33	[-1.73, 1.08]	0.38	[-0.67, 1.42]
Year Two (N = 20,523) 1st quintile	0.44	[-1.31, 2.19]	-0.28	[-2.10, 1.55]
5th quintile	-0.40	[-2.01, 1.20]	0.25	[-1.41, 1.90]
Overall (N = 28,179) 1st quintile	0.38	[-0.99, 1.75]	-0.34	[-1.59, 0.90]
5th quintile	-0.36	[-1.67, 0.95]	0.32	[-0.85, 1.49]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique demonstration participants eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two and overall change estimates are calculated as weighted averages of individual quarterly estimates with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend towards decreasing the rate of **medical specialist visits** among MAPCP Demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries by 21.67 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **surgical specialist visits** among MAPCP Demonstration beneficiaries by 27.32 per 1,000 beneficiary quarters.

### **6.4.3 Discussion of Access to Care and Coordination of Care**

Overall, we found no significant evidence that primary care visits increased or that medical specialist visits decreased for MAPCP Demonstration practices relative to the PCMH and non-PCMH groups, though in Year Two we observed a trend toward a decreasing rate of medical specialist visits relative to non-PCMH practices. Visits to surgical specialists increased for beneficiaries assigned to MAPCP Demonstration practices compared to both PCMH and non-PCMH comparison practices. There was no significant increase in the percentage of visits to primary care physicians.

We found no evidence that MAPCP Demonstration practices were associated with an increase in the rate of follow-up visits after an inpatient stay, a reduction in the rate of 30-day unplanned readmissions, or an improvement in continuity of care relative to either the PCMH or non-PCMH comparison groups. Given that practice and network staff reported focusing significant time and resources on improving care coordination in Years One and Two, these results warrant further examination of trends over the coming year. Site visit findings suggested that the impact of care management was limited to a fraction of a practice's patient panel, while practice staff still were learning how best to carry out their own care coordination activities.

## **6.5 Beneficiary Experience with Care**

### **6.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

CCNC and network staff expected nurse care managers' activities to connect patients to community resources, to enhance access to care, and to encourage self-management and active participation in decisions about care would improve beneficiaries' experience with care. Nurse care managers reported that visiting beneficiaries at their homes or in the hospital over the past year were important activities.

Interviewees in one network described efforts to engage patients in shared decision-making. One network staff member said the network encourages use of self-management notebooks. A network staff member and a care manager both mentioned caregiver education and motivational interviewing as activities they used to encourage patients to participate in their own care and become goal focused. For example, one nurse care manager encouraged a young patient with diabetes, who was experiencing pain related to poor self-management, to focus on managing the diabetes to help with pain, instead of focusing on pain relief as the short-term goal and diabetes management as the long-term goal. A practice staff member stressed the importance

of focusing on one thing at a time and trying to get patients to understand what their doctors said to them.

Network and practice staff described activities to educate patients about their conditions to facilitate better self-management, for example, by providing clinical summary sheets and educational handouts. Several staff noted that they were already doing this for Medicaid patients before the demonstration began. A network staff member described helping practice staff learn the “teach-back” method for confirming patients’ understanding of health information. Several other staff said they helped patients enroll in diabetes or obesity education classes.

Practice staff reported that changes related to practice transformation were not readily apparent to patients seen in the office who had not received care management. CCNC staff said that, beyond the types of care management activities traditionally used with the Medicaid population, they still were learning about what additional activities might be available to affect the Medicare population’s experience with care, as they have fewer reimbursed care management and community supports than does the Medicaid population. They said it would take several additional years to experiment with new care management activities for the Medicare population and to develop similar data-driven techniques to parallel those developed over two decades for the Medicaid population.

Interviewees recognized that, overall, beneficiary experiences did not change much as a result of the demonstration, in part because of the difficulty in getting patients to change customary behaviors. Care managers said that being more directly involved with patients has improved self-management. For example, providing pill boxes or demonstrating how to use them helped patients directly. Several care managers noted that it took much explanation and answering many questions to gain patients’ trust, which either slowed or prevented improvements. Consequently, home visits with patients were an important piece of care management. Several practice staff said that they were educating patients, but noted many challenges, including patients who cannot read or do not have Internet access or skills. Several nurse care managers noted the difficulty of arranging home or hospital visits with Medicare patients who were often suspicious of such contact. After performing tasks such as medication reconciliation or teaching patients how to use inhalers, however, they said that patients greatly appreciated their work and became more receptive to care managers’ participation in their care.

Several practice staff thought that some PCMH activities inadvertently had a negative impact on beneficiary experience with care. One network director stated that problems with NCTracks and the work required to become PCMH-certified had limited the time available for practice staff to focus on patient engagement. For example, one practice staff person said implementation of their EHR system was “getting in the way a little bit while we’re all getting used to it.” Another thought that using the EHR system extended patient wait times, because of the need to enter all data into the patient record for complicated patients with multiple chronic conditions.

## **6.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between the North Carolina MAPCP Demonstration and changes in beneficiary experience with care are not yet available. In the final

report, we plan to report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

## **6.6 Effectiveness (Utilization & Expenditures)**

### **6.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures During Year Two**

According to its MAPCP Demonstration application, North Carolina estimated that Medicare was going to achieve savings of approximately \$37 million (\$25.2 million net of payments to practices and networks) over the course of the demonstration. The identified savings were to be generated from three key areas: (1) reduced inpatient hospital readmission rate, (2) reduced inpatient hospital admission rate for potentially preventable hospitalizations, and (3) reduced unnecessary ER use. Based on a review of the literature, a reduction of 25 percent for hospital readmissions was assumed in Year One, 30 percent in Year Two, and 35 percent in Year Three, resulting in a 5.9 percent average reduction in hospital admissions across the 3 years of the demonstration. Regarding admissions for preventable hospitalizations, reductions of 10 percent of potentially preventable admissions were assumed for Year One, 20 percent for Year Two, and 30 percent for Year Three. These reductions were expected to reduce overall admissions by 3.65 percent across the 3 years of the demonstration. The demonstration is expected to reduce the number of ER users by 3.2 percent and the number of services per user by 3.3 percent over the 3 years of the demonstration.

State, network, and provider interviewees identified a range of activities expected to affect utilization and costs in MAPCP Demonstration practices. Expanded access to care outside regular business hours and same-day scheduling were expected to reduce unnecessary utilization. During Year Two, state staff also focused on increasing the number of patients involved with care managers and practices. For example, over the last year, the CCNC Informatics team developed two indicators, one identifying beneficiaries with high utilization and one identifying beneficiaries with multiple serious chronic conditions. When those patients are hospitalized, the provider portal provides reports and care alerts to network and provider staff identifying the patients to receive transitional care. One practice noted that the provider portal information was not up-to-date; for example, ER visit information was approximately 1 month old.

During Year Two, network staff undertook a range of activities expected to increase appropriate utilization and decrease unnecessary utilization. Network 1 encouraged practices to use provider portal reports and care alerts to identify undesirable utilization patterns and to track referrals and tests using what they learned in the PCMH accreditation process. Staff from Network 1 reviewed daily hospital reports from three local hospitals and ran analytic reports on ER visits, admissions, and readmissions, with the goal of increasing care manager contacts with discharged patients to change utilization patterns. Care managers attended one hospital's weekly care management meetings to identify Medicare and BCBSNC patients as targets for collaboration for hospital discharge planning. Other Network 1 activities potentially affecting utilization and costs included fielding a survey of the 25 highest ER users in some practices to ask questions about patients' use of the ER and inserting notes to the physician in patient pharmacy records about medication management to help reduce inpatient admissions. One practice interviewee attempted to see a patient after an inpatient admission within seven days

after his/her discharge and worked on medication reconciliation with care managers to prevent readmission. Both Network 1 and Network 3 made efforts to provide care management to more patients, by increasing care manager caseloads in Network 1 and by hiring additional care managers in Network 3.

Despite these efforts, several network and practice staff reported little or no success in improving utilization patterns. A network staff interviewee said that some patients contacted about inappropriate ER utilization continued to use the ER because they could not get to their primary care practice, or did not understand that the ER was not appropriate for their specific care needs. One practice used provider portal data to flag its high ER users' charts, so that staff know to make an appointment as soon as possible when the patient calls. They were not always successful in doing so. Another practice did not focus on high ER utilization and inpatient rates because they did not get information on admitted patients directly from the hospital, and because the learning curve for understanding any new system that would provide that information directly would be steep.

### 6.6.2 Changes in Utilization and Expenditures

**Tables 6-9** and **6-10** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between the MAPCP Demonstration and two comparison groups: PCMHs and non-PCMHs. **Table 6-9** contains measures of total expenditures and specific categories of expenditures expected to be affected by the demonstration. Estimates in this table are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison groups. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. The MAPCP Demonstration is expected to reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether the demonstration is associated with the intended utilization changes in these care categories, we observe acute-care, post-acute-care, ER, specialty physician, and imaging expenditures. We also analyze changes in all-cause admissions and all-cause ER visits measured as rates per 1,000 beneficiary quarters. **Table 6-10** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years. A *negative* value corresponds to a *decrease* in the rate of events, and a *positive* value corresponds to an *increase* in the rate of events.

The MAPCP Demonstration also is expected to result in higher utilization of certain types of services. In particular, we expect that the demonstration will increase utilization of primary care, home-based care, and outpatient services (including care received at hospital outpatient departments, federally qualified health centers [FQHCs], and RHCs). These services are captured in our measures of primary care physician expenditures, home health expenditures, and outpatient expenditures. Positive regression coefficients indicate that the demonstration is associated with the expected increase in the use of these services.

As described above, the MAPCP Demonstration is expected to decrease the use of some services, while increasing the use of others. Overall, however, the demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyze the average overall Medicare PBPM expenditures and look for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in *Section 6.6.4*.

**Table 6-9**  
**North Carolina: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 26,472)	-27.48	[-92.26, 37.31]	-16.54	[-73.70, 40.62]
Year Two (N = 27,808)	-3.31	[-56.65, 50.03]	-11.31	[-47.58, 24.95]
Overall (N = 30,836)	-14.54	[-70.26, 41.19]	-13.74	[-56.96, 29.47]
Acute-care				
Year One (N = 26,472)	1.08	[-26.02, 28.19]	-19.31	[-58.48, 19.86]
Year Two (N = 27,808)	-9.66	[-37.81, 18.49]	-12.73	[-33.21, 7.76]
Overall (N = 30,836)	-4.67	[-30.13, 20.79]	-15.78	[-42.34, 10.77]
Post-acute-care				
Year One (N = 26,472)	-11.07	[-26.70, 4.56]	3.31	[-5.47, 12.10]
Year Two (N = 27,808)	2.70	[-9.46, 14.87]	3.68	[-3.46, 10.82]
Overall (N = 30,836)	-3.69	[-16.00, 8.62]	3.51	[-3.57, 10.58]
ER visits not leading to hospitalization				
Year One (N = 26,472)	0.89	[-2.53, 4.30]	0.59	[-2.24, 3.42]
Year Two (N = 27,808)	1.92	[-1.10, 4.95]	1.34	[-0.47, 3.16]
Overall (N = 30,836)	1.44	[-1.46, 4.34]	0.99	[-0.94, 2.93]
Outpatient				
Year One (N = 26,472)	-11.34	[-24.14, 1.45]	1.71	[-6.00, 9.43]
Year Two (N = 27,808)	6.92	[-3.10, 16.94]	10.04*	[2.96, 17.11]
Overall (N = 30,836)	-1.56	[-12.01, 8.88]	6.17	[-0.10, 12.44]
Specialty physician				
Year One (N = 26,472)	0.83	[-5.61, 7.27]	-3.28	[-10.67, 4.11]
Year Two (N = 27,808)	4.07	[-1.92, 10.05]	-4.43	[-13.99, 5.13]
Overall (N = 30,836)	2.56	[-3.31, 8.44]	-3.90	[-12.31, 4.52]

(continued)

**Table 6-9 (continued)**  
**North Carolina: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG Non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care physician				
Year One (N = 26,472)	-1.34	[-4.57, 1.89]	-0.66	[-3.61, 2.28]
Year Two (N = 27,808)	-1.59	[-4.93, 1.74]	-2.05	[-5.40, 1.31]
Overall (N = 30,836)	-1.47	[-4.70, 1.75]	-1.40	[-4.51, 1.70]
Home health				
Year One (N = 26,472)	-1.62	[-5.32, 2.09]	2.65	[-0.18, 5.48]
Year Two (N = 27,808)	-2.41	[-6.78, 1.96]	0.61	[-2.68, 3.90]
Overall (N = 30,836)	-2.04	[-5.56, 1.48]	1.56	[-1.28, 4.40]
Other non-facility				
Year One (N = 26,472)	-2.08	[-5.73, 1.56]	-8.53*	[-13.46, -3.60]
Year Two (N = 27,808)	-3.79*	[-7.25, -0.33]	-8.64*	[-13.21, -4.06]
Overall (N = 30,836)	-3.00	[-6.29, 0.30]	-8.59*	[-13.22, -3.95]
Laboratory				
Year One (N = 26,472)	-2.14	[-6.19, 1.90]	-2.49	[-5.92, 0.95]
Year Two (N = 27,808)	-1.35	[-5.04, 2.34]	-3.13	[-6.36, 0.11]
Overall (N = 30,836)	-1.72	[-5.50, 2.06]	-2.83	[-6.09, 0.43]
Imaging				
Year One (N = 26,472)	-0.57	[-2.33, 1.20]	-0.50	[-1.90, 0.89]
Year Two (N = 27,808)	-0.82	[-2.91, 1.26]	-1.15	[-2.89, 0.58]
Overall (N = 30,836)	-0.70	[-2.59, 1.18]	-0.85	[-2.37, 0.67]
Other facility				
Year One (N = 26,472)	0.50	[-0.02, 1.02]	0.45	[-0.30, 1.20]
Year Two (N = 27,808)	0.25	[-0.03, 0.53]	-0.14	[-0.63, 0.36]
Overall (N = 30,836)	0.37*	[0.01, 0.73]	0.14	[-0.35, 0.62]

**NOTES:**

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 6-10**  
**North Carolina: Comparison of average change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 26,472)	-0.38	[-8.17, 7.41]	-0.69	[-5.02, 3.63]
Year Two (N = 27,808)	0.15	[-7.18, 7.48]	1.89	[-1.65, 5.43]
Overall (N = 30,836)	-0.10	[-7.12, 6.93]	0.69	[-2.62, 4.00]
ER visits not leading to hospitalization				
Year One (N = 26,472)	5.72	[-2.00, 13.44]	-0.89	[-7.62, 5.85]
Year Two (N = 27,808)	4.99	[-5.06, 15.04]	-2.96	[-10.42, 4.49]
Overall (N = 30,836)	5.33	[-3.06, 13.71]	-2.00	[-8.44, 4.44]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There was no statistically significant difference in the *overall* growth of **total Medicare expenditures** among beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in either PCMH or non-PCMH comparison practices.
- Relative to beneficiaries in non-PCMH practices, a positive estimate in Year Two suggests a potential trend toward faster growth in **outpatient (including FQHCs) expenditures** among beneficiaries in NC MAPCP Demonstration practices, though the *overall* estimate was not statistically significant.
- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend toward slower growth in **other non-facility expenditures** among beneficiaries in NC MAPCP Demonstration practices, though the *overall* estimate was not statistically significant.
- The *overall* growth in **other non-facility expenditures** is \$8.59 slower among beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.

- The *overall* growth in **other expenditures** was faster relative to beneficiaries in PCMH practices.
- When using beneficiaries assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the NC MAPCP Demonstration is associated with a change in the rates of **all-cause admissions** or **ER visits not leading to hospitalizations** among demonstration beneficiaries.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the NC MAPCP Demonstration is associated with a change in the rates of **all-cause admissions** or **ER visits not leading to hospitalizations** among demonstration beneficiaries.

### 6.6.3 Medicare Budget Neutrality in Year Two of the North Carolina MAPCP Demonstration

#### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention, absent any fees paid on behalf of Medicare. Estimates of gross savings for North Carolina through Year Two of the demonstration are based on the sum of eight quarter-specific cost regression coefficients comparing beneficiaries attributed to demonstration practices to beneficiaries attributed to PCMH comparison practices. Negative cost estimates denote savings, as the growth in MAPCP Demonstration costs was smaller than in the comparison group. Positive cost estimates denote losses, as the growth in MAPCP Demonstration costs exceeded that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares with the beneficiary quarter as the unit of analysis.

#### MAPCP Demonstration Fees

In the MAPCP Demonstration, CMS is paying monthly medical home fees totaling between \$9 and \$10 to demonstration practices for Medicare-assigned demonstration beneficiaries and to the CCNC networks for their medical home support activities. Fees represent those actually paid out, and there is no imputation for practices choosing not to bill for care management under the demonstration.

Total monthly fees paid by Medicare are aggregated to the quarter level from claims submitted on behalf of the practices and other participating organizations. Budget neutrality, or net savings, is determined on a yearly (or multiple-year) basis by subtracting all paid fees during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality are slightly lower than the actual fees paid because the savings regression model excludes beneficiaries eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees also are calculated excluding beneficiaries with fewer than 3 months of demonstration eligibility.

## Statistical Tests of Budget Neutrality

The regression methodology allows for statistical tests of confidence that CMS and the states can place in any estimated savings. Three tests are conducted in the analysis.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration intervention associated with a lower level of costs in one or more demonstration quarters during the first 2 years?*
2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings must be positive, implying systematically lower demonstration expenditures relative to the PCMH comparison group and controlling for beneficiary and practice characteristics.
3. The third test requires that total gross savings exceeds total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid out?*

## Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures

In addition to statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration in perspective. The first measure is the return on investment (RoI) of fees, the ratio of total gross savings to total fees paid by the demonstration. RoI answers the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implies budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among demonstration beneficiaries in the absence of the demonstration. This unobservable outcome is estimated by taking average Medicare expenditures in the comparison group and multiplying them by the number of demonstration beneficiaries. Viewing the total gross savings in the context of this number answers the question: What was Medicare's savings as a percentage of all expenditures? The validity of the interpretation of both of these ratios, however, relies on the statistical significance of the estimate of total gross savings.

*Tables 6-11a–c* report the estimated gross and net savings during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 6-11a**  
**North Carolina: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2011: Q4 (Oct–Dec)	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	2012: Q3 (Jul–Sept)	
Difference in quarterly expenditures per beneficiary (A)	-\$72.37	-\$178.11	-\$165.89	\$14.77	-\$101.65
Eligible beneficiary quarters (B)	11,356	18,373	20,483	20,510	70,722
Total gross savings (C = -A*B)	\$821,834	\$3,272,476	\$3,397,841	-\$302,987	\$7,189,164
Total MAPCP Demonstration fees (D)	\$303,342	\$492,524	\$558,034	\$558,387	\$1,912,287
Net savings (E = C-D)	\$518,492	\$2,779,952	\$2,839,807	-\$861,374	\$5,276,877
Average expenditures (PCMH comparison group) (F)	\$2,343	\$2,619	\$2,651	\$2,256	\$2,479
Total expenditures (PCMH comparison group) (G = F*B)	\$26,607,108	\$48,118,887	\$54,300,433	\$46,270,560	\$175,296,988
Average expenditures (MAPCP Demonstration) (H)	\$2,315	\$2,195	\$2,292	\$2,268	\$2,264
Total expenditures (MAPCP Demonstration) (I = H*B)	\$26,289,140	\$40,328,735	\$46,947,036	\$46,516,680	\$160,081,591

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net Savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in comparison group. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (Comp) (F\*B): Weighted average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2011:Q4-2013:Q3.

**Table 6-11b**  
**North Carolina: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2012 : Q4 (Oct–Dec)	2013 : Q1 (Jan–Mar)	2013 : Q2 (Apr–Jun)	2013 : Q3 (Jul–Sept)	
Difference in quarterly expenditures per beneficiary (A)	\$77.57	-\$51.70	\$2.50	-\$165.87*	-\$33.91
Eligible beneficiary quarters (B)	20,487	20,649	20,332	20,131	81,600
Total gross savings (C = -A*B)	-\$1,589,111	\$1,067,554	-\$50,859	\$3,339,168	\$2,766,752
Total MAPCP Demonstration fees (D)	\$566,240	\$563,534	\$564,067	\$560,362	\$2,254,203
Net savings (E = C-D)	-\$2,155,351	\$504,020	-\$614,926	\$2,778,806	\$512,549
Average expenditures (PCMH comparison group) (F)	\$2,241	\$2,343	\$2,360	\$2,349	\$2,323
Total expenditures (PCMH comparison group) (G = F*B)	\$45,911,367	\$48,380,607	\$47,983,520	\$47,287,719	\$189,563,213
Average expenditures (MAPCP Demonstration) (H)	\$2,292	\$2,228	\$2,262	\$2,126	\$2,227
Total expenditures (MAPCP Demonstration) (I = H*B)	\$46,956,204	\$46,005,972	\$45,990,984	\$42,798,506	\$181,751,666

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees, excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net Savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in comparison group. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (Comp) (F\*B): Weighted average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2011:Q4-2013:Q3.

**Table 6-11c**  
**North Carolina: Estimates of gross savings, fees paid, and net savings, all years**

	Year One & Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	-\$65.36	-\$226.42	\$95.70
Eligible beneficiary quarters (B)	152,322	—	—
Eligible beneficiaries overall	30,836	—	—
Total gross savings (C = -A*B)	\$9,955,916	-\$14,576,741	\$34,488,572
Total MAPCP Demonstration fees (D)	\$4,166,490	—	—
Net savings (E = C-D)	\$5,789,426	-\$18,743,231	\$30,322,082
Average expenditures (PCMH comparison group) (F)	\$2,395	—	—
Total expenditures (PCMH comparison group) (G = F*B)	\$364,860,201	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,244	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$341,833,257	—	—
Return on fees (J = C/D)	2.39	—	—
Gross savings per comparison expenditures (K = C/G)	0.027	—	—

NOTES:

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A\*B): Weighted average of the quarterly difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (Comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (Comp) (F\*B): Average expenditures (Comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(J) Return on fees (J = C/D): Total gross savings divided by Total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

\* Statistically significant at the 10 percent level.

MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

SOURCE: Medicare claims 2011:Q4-2013:Q3.

- Estimated differences in MAPCP Demonstration costs per beneficiary, relative to the comparison group, ranges from a positive \$77.57 (2012: Quarter 4) to a negative \$178.11 (2012: Quarter 1) [*Tables 6-11a–b*]. While estimates in five of the eight

quarters are negative, they are statistically insignificant in all but the eighth quarter (2013: Quarter 3).

- Estimated total gross savings to Medicare is a positive \$9,955,916 [**Table 6-11c: C**]. The savings were not statistically significant, however. The confidence interval (2-sided; 90% level) ranges between \$14.6 million in losses to \$34.5 million in savings. Net savings are estimated at \$5,789,426, but similarly are not statistically significant.
- The \$9.96 million savings estimate is 2.7 percent of the estimated \$365 million in comparison group costs weighted by MAPCP Demonstration eligible beneficiaries [**Table 6-11c: K**]. The width of the confidence interval for total gross savings, however, indicates that the gross savings rate to date cannot be considered statistically different from zero.
- Total fees paid out on the basis of MAPCP Demonstration eligible quarters were \$4,166,490 [**Table 6-11c: D**], or \$9.12 per eligible month.<sup>1</sup> This total fee is consistent with the combined PBPM fee of between \$2.50 and \$3.50 to practices and \$6.50 to the CCNC Network paid by Medicare. The fees averaged about 1.2 percent of total Medicare expenditures for health services by MAPCP Demonstration beneficiaries during the demonstration's first 2 years [**Table 6-11c: I**].
- These results translate into a positive Medicare RoI of fees of 2.39 (\$9,955,916/\$4,166,490), though the confidence interval around the total gross savings estimate does not indicate statistical significance.

#### 6.6.4 Discussion of Effectiveness

Overall, there was no statistically significant difference in total Medicare expenditures among beneficiaries in the MAPCP Demonstration relative to the PCMH or non-PCMH comparison groups. State, network, and provider interviewees identified a range of activities during the Year Two site visit that were expected to affect utilization and costs in North Carolina MAPCP Demonstration practices. Practices improved access to care through 24/7 access and same-day scheduling and integrated network care management services. Care management activities focused on patients with chronic conditions, with high utilization rates, and those discharged from the hospital or ER. By working with these patients to manage their conditions, educate them about appropriate use of the ER, and address nonclinical issues affecting their health, care managers expected to lower high cost utilization, such as inpatient and ER use. These activities were expected to reduce the overall rate of expenditure growth, although many interviewees said that significantly changing utilization patterns could take several years.

Despite the demonstration activities outlined above, we saw no significant difference in the change in rates of all-cause hospital admissions and ER visits not leading to hospitalization,

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<sup>1</sup> Calculate fees per eligible month by dividing total fees (\$4,166,490) by MAPCP eligible months, which is MAPCP Demonstration-eligible quarters (152,322) multiplied by 3.

or in expenditures for those types of utilization. This was consistent with Year Two site visit interview findings; some network and practice staff reported little or no success in improving utilization patterns through their medical home activities because of difficulties in altering patient behavior and using health IT proficiently to target patients with a history of inappropriate utilization. Additionally, network care management capacity was limited by care management staff and case load size. Thus, these services were provided to a fraction of MAPCP Demonstration beneficiaries and possibly were not provided at sufficient scale or targeted to maximize change in effectiveness measures.

In summary, statistical analyses did not yield results showing that the demonstration was significantly associated with a reductions in Medicare expenditures and rates of hospital admissions and ER use. Site visit interviewees reported that they still were learning how best to use the many available health IT resources to identify opportunities to influence utilization and effectively target care management for this purpose.

Savings in North Carolina were estimated to be \$9.96 million over the first 2 years of the demonstration, though these savings were not statistically significant. The results were consistent with the quarterly estimates, which showed that in five of the eight quarters of the demonstration period, Medicare costs per beneficiary were lower among the MAPCP Demonstration beneficiaries compared to the PCMH comparison beneficiaries (though these differences in costs were not significant, except for the last quarter of Year Two). While the findings did not support statistically significant savings for North Carolina, they should be considered in the context that the medical home fees paid to practices and the CCNC Network represented a little over 1.2 percent of Medicare total investment in paying for the health care of MAPCP Demonstration participants.

## **6.7 Special Populations**

### **6.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

North Carolina's initiative does not target any special populations for interventions or services. The care management and clinical pharmacy services available to participating demonstration practices, however, focus on high-risk subpopulations, including people at high risk for hospital readmission, those with multiple chronic conditions, those with polypharmacy, patients in care transitions, and beneficiaries dually eligible for Medicare and Medicaid. Because dually eligible beneficiaries often have many conditions or characteristics that make them high-risk populations, the nurse care managers reported that they do not employ any specific interventions; instead, they try to manage the whole spectrum of their health care needs.

### **6.7.2 Changes Experienced by Special Populations**

In all states, we provide quantitative analysis of the association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries. These special populations include beneficiaries with particular conditions that could lead to higher utilization of health care (beneficiaries with multiple chronic conditions, with behavioral health conditions, or with disabilities) or those who may experience disparities in access to and quality of health care (beneficiaries who are dually eligible for Medicare and Medicaid, who live

in rural areas, or who belong to racial/ethnic minorities). Based on information from our site visits identifying differences in implementation of the demonstration across the four networks, we also examine the changes associated with the MAPCP Demonstration for each of the four networks separately.

**Table 6-12** reports covariate-adjusted differences in total Medicare spending PBPM for the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for all 10 special populations. Estimates in **Table 6-12** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to faster growth.

The next five tables, **Tables 6-13** through **6-17**, examine the changes associated with the MAPCP Demonstration for beneficiaries with multiple chronic conditions. Care management might be expected to have a greater impact on outcomes for this population than for the Medicare population in general, and, for this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population in all states.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in 2 consecutive years of Medicare claims. To identify chronic conditions, we used the Chronic Condition Indicator algorithm, developed by AHRQ as part of the Healthcare Cost and Utilization Project (discussed in more detail in Appendix D). The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one lasting 12 months or longer and meeting one or both of the following conditions: (a) limiting a person’s ability to care for themselves, live independently, or interact with others; (b) requiring ongoing intervention with medical products, services, and/or special equipment. Beneficiaries also have to be in the CMS-HCC high-risk category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 25 percent of MAPCP Demonstration beneficiaries fit this profile in North Carolina.

Medicare beneficiaries with behavioral health conditions are another population with greater health needs who could benefit more from care management, relative to the Medicare population in general. This population also has expenditures and utilization directly identifiable as due to behavioral health conditions. In all states, we report the changes associated with the MAPCP Demonstration on a selection of overall and behavioral-health-specific expenditure and utilization outcomes; the results for North Carolina are in **Table 6-18** and **Table 6-19**.

For the remaining special populations listed above, we provide additional analyses of the association between the MAPCP Demonstration and selected expenditure and utilization outcomes only if the demonstration had a statistically significant association with its total Medicare expenditures, as reported in **Table 6-12**. For these special populations, we report the outcomes requested by CMS (acute-care expenditures, outpatient ER expenditures, primary care physician expenditures, specialty care physician expenditures, acute hospital visits, outpatient ER visits, and readmissions) to understand more fully the significant reductions in total Medicare expenditures. In North Carolina, these outcomes for beneficiaries in Network 2 are reported in **Table 6-20**.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in *Section 6.7.3*.

**Table 6-12**  
**North Carolina: Comparison of average change estimates for total PBPM Medicare expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Multiple chronic conditions only				
Year One (N = 6,841)	-50.95	[-197.31, 95.41]	-28.91	[-182.50, 124.68]
Year Two (N = 6,580)	-60.07	[-183.96, 63.81]	-77.53	[-158.64, 3.58]
Overall (N = 7,623)	-55.61	[-180.41, 69.20]	-53.74	[-158.40, 50.92]
Behavioral health conditions only				
Year One (N = 2,392)	-97.75	[-213.33, 17.84]	-1.12	[-89.51, 87.27]
Year Two (N = 2,320)	-6.53	[-66.32, 53.25]	-39.29	[-100.76, 22.17]
Overall (N = 2,762)	-50.82	[-122.12, 20.49]	-20.76	[-84.15, 42.62]
Disabled beneficiaries only				
Year One (N = 8,246)	-43.63	[-125.42, 38.17]	-51.92	[-161.41, 57.56]
Year Two (N = 8,186)	-39.18	[-120.75, 42.38]	-11.14	[-62.27, 39.99]
Overall (N = 9,369)	-41.33	[-115.66, 33.00]	-30.85	[-103.74, 42.05]
Dually eligible beneficiaries only				
Year One (N = 7,230)	-7.23	[-124.47, 110.02]	30.11	[-54.84, 115.06]
Year Two (N = 7,034)	25.17	[-74.03, 124.38]	14.48	[-47.49, 76.45]
Overall (N = 8,120)	9.36	[-89.40, 108.11]	22.11	[-44.28, 88.49]
Rural beneficiaries only				
Year One (N = 19,513)	-70.98	[-165.94, 23.97]	8.23	[-91.08, 107.54]
Year Two (N = 19,592)	-34.82	[-127.61, 57.96]	16.51	[-54.20, 87.21]
Overall (N = 21,961)	-52.04	[-142.29, 38.21]	12.57	[-68.87, 94.00]
Non-White beneficiaries only				
Year One (N = 5,130)	-28.03	[-143.41, 87.34]	-102.45	[-269.08, 64.18]
Year Two (N = 5,154)	-20.99	[-124.73, 82.74]	-18.52	[-95.97, 58.94]
Overall (N = 5,804)	-24.32	[-121.28, 72.63]	-58.22	[-168.13, 51.70]
Network 1 and all comparisons				
Year One (N = 8,936)	-28.52	[-95.03, 37.99]	-10.90	[-70.73, 48.93]
Year Two (N = 10,329)	-23.30	[-77.24, 30.65]	-30.79	[-67.95, 6.37]
Overall (N = 11,165)	-25.68	[-81.22, 29.85]	-21.72	[-65.15, 21.72]
Network 2 and all comparisons				
Year One (N = 3,787)	-147.45*	[-199.87, -95.02]	-139.86*	[-188.65, -91.07]
Year Two (N = 4,100)	-73.35*	[-135.55, -11.16]	-96.79*	[-125.51, -68.08]
Overall (N = 4,347)	-98.33*	[-145.13, -51.53]	-101.96*	[-134.15, -69.78]

(continued)

**Table 6-12 (continued)**  
**North Carolina: Comparison of average change estimates for total PBPM Medicare expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Network 3 and all comparisons				
Year One (N = 10,329)	10.80	[-62.96, 84.55]	27.35	[-36.00, 90.71]
Year Two (N = 9,646)	40.18	[-26.32, 106.68]	32.33	[-19.65, 84.30]
Overall (N = 11,418)	25.18	[-40.40, 90.77]	29.79	[-23.21, 82.79]
Network 4 and all comparisons				
Year One (N = 3,420)	-61.86*	[-109.36, -14.36]	-53.35*	[-102.92, -3.77]
Year Two (N = 3,733)	6.51	[-75.62, 88.64]	-16.64	[-87.03, 53.75]
Overall (N = 3,906)	-20.22	[-83.53, 43.09]	-30.99	[-85.01, 23.02]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in total Medicare expenditures is \$98.33 slower among **Network 2 beneficiaries** in NC MAPCP Demonstration practices relative to beneficiaries in PCMH practices.
- The *overall* growth in total Medicare expenditures is \$106.96 slower among **Network 2 beneficiaries** in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.

Although there were no significant associations between the MAPCP Demonstration and total Medicare expenditures among beneficiaries with multiple chronic conditions in NC MAPCP Demonstration practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on outcomes for this population. In the next subsection, we further explore the association of the MAPCP Demonstration with outcomes for Medicare beneficiaries with multiple chronic conditions.

## Beneficiaries with Multiple Chronic Conditions

Care management potentially could have greater effects on populations with multiple chronic conditions than on the general population. In the next five tables, we consider the association between the MAPCP Demonstration and changes for the subpopulation of beneficiaries with multiple chronic conditions, looking at quality of care, access to care, and expenditures. The MAPCP Demonstration group and the PCMH and non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions. Estimates in **Table 6-13** are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of patients' receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. MAPCP Demonstration beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the "none" indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 6-14**. Estimates in **Table 6-14** are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improved access to ambulatory care, we would expect demonstration beneficiaries with multiple chronic conditions to have a reduction (i.e., a significant negative value) in the rate of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 6.3.2**.

**Table 6-13**  
**North Carolina: Comparison of average change estimates for process of care indicators**  
**among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 1,932)	0.91	[-2.21, 4.03]	1.54	[-0.27, 3.34]
Year Two (N = 1,165)	0.89	[-2.13, 3.91]	0.91	[-1.03, 2.84]
Overall (N = 1,986)	0.90	[-1.03, 2.84]	1.30	[-0.25, 2.85]
Retinal eye examination				
Year One (N = 1,932)	-3.79	[-9.35, 1.77]	-2.26	[-4.91, 0.39]
Year Two (N = 1,165)	4.76*	[0.35, 9.16]	2.66	[-0.83, 6.15]
Overall (N = 1,986)	-0.61	[-4.09, 2.87]	-0.43	[-2.84, 1.98]

(continued)

**Table 6-13 (continued)**  
**North Carolina: Comparison of average change estimates for process of care indicators**  
**among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
LDL-C screening				
Year One (N = 1,932)	0.74	[-3.88, 5.36]	1.08	[-1.15, 3.31]
Year Two (N = 1,165)	0.86	[-6.20, 7.92]	1.69	[-1.46, 4.84]
Overall (N = 1,986)	0.79	[-4.42, 5.99]	1.31	[-0.97, 3.59]
Medical attention for nephropathy				
Year One (N = 1,932)	3.27	[-2.59, 9.13]	0.79	[-3.83, 5.42]
Year Two (N = 1,165)	9.23*	[1.53, 16.93]	5.34*	[0.81, 9.88]
Overall (N = 1,986)	5.49	[-0.14, 11.12]	2.49	[-1.73, 6.70]
Received all 4 diabetes tests				
Year One (N = 1,932)	0.11	[-4.14, 4.36]	-1.48	[-5.41, 2.45]
Year Two (N = 1,165)	8.62*	[3.39, 13.85]	5.00*	[0.79, 9.22]
Overall (N = 1,986)	3.28	[-0.55, 7.11]	0.93	[-2.52, 4.38]
Received none of the 4 diabetes tests				
Year One (N = 1,932)	0.35	[-0.28, 0.98]	-0.96	[-2.05, 0.14]
Year Two (N = 1,165)	-0.89*	[-1.74, -0.04]	-0.58	[-1.34, 0.18]
Overall (N = 1,986)	-0.11	[-0.74, 0.52]	-0.82*	[-1.59, -0.04]
Total lipid panel				
Year One (N = 3,509)	2.16	[-5.34, 9.65]	1.53	[-1.38, 4.44]
Year Two (N = 2,176)	-0.05	[-8.80, 8.69]	1.88	[-1.30, 5.05]
Overall (N = 3,802)	1.32	[-6.27, 8.92]	1.66	[-1.12, 4.44]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a positive trend toward receiving a **retinal eye examination**, though at this time the *overall* estimate is not statistically significant.

- When using beneficiaries with multiple chronic conditions assigned to either PCMH or non-PCMH practices as a comparison group, the Year Two estimate suggests a positive trend toward receiving **medical attention for nephropathy**, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to either PCMH or non-PCMH practices as a comparison group, the Year Two estimate suggests a positive trend towards receiving **all four diabetes tests**, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a negative trend toward receiving **none of the four diabetes tests**, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimates indicate that the NC MAPCP Demonstration is associated with a decrease in the likelihood that demonstration beneficiaries received **none of the four diabetes tests** by 0.82 percentage points.

**Table 6-14**  
**North Carolina: Comparison of average change estimates for health outcomes among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 6,841)	-2.14	[-6.35, 2.08]	-1.07	[-3.63, 1.48]
Year Two (N = 6,580)	-4.91*	[-9.52, -0.30]	-6.19*	[-9.64, -2.74]
Overall (N = 7,623)	-3.55	[-7.35, 0.25]	-3.69*	[-6.16, -1.22]
PQI admissions—overall <sup>2</sup>				
Year One (N = 6,841)	-1.01	[-10.45, 8.44]	0.35	[-4.20, 4.90]
Year Two (N = 6,580)	-1.97	[-11.75, 7.81]	2.98	[-2.81, 8.76]
Overall (N = 7,623)	-1.50	[-10.52, 7.52]	1.69	[-2.80, 6.19]
PQI admissions—acute <sup>3</sup>				
Year One (N = 6,841)	1.24	[-3.26, 5.74]	1.87	[-0.94, 4.68]
Year Two (N = 6,580)	2.87	[-0.10, 5.83]	3.51*	[0.26, 6.76]
Overall (N = 7,623)	2.07	[-1.11, 5.25]	2.71*	[0.00, 5.41]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 6,841)	-2.25	[-8.73, 4.23]	-1.41	[-3.86, 1.04]
Year Two (N = 6,580)	-4.61	[-11.73, 2.50]	-0.68	[-3.85, 2.49]
Overall (N = 7,623)	-3.46	[-9.94, 3.03]	-1.04	[-3.28, 1.20]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend toward decreasing the rate of **avoidable catastrophic events** among demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with a decrease in the rate of **avoidable catastrophic events** among demonstration beneficiaries by 3.69 per 1,000 beneficiary quarters.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **acute PQI admissions** among demonstration beneficiaries by 2.71 per 1,000 beneficiary quarters.

**Table 6-15** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the MAPCP Demonstration and the two comparison groups—PCMHs and non-PCMHs—for those with multiple chronic conditions. With the exception of primary care visits as a percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits are categorized by quintiles of the outcome distribution. Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 6.4.2**.

**Table 6-15**  
**North Carolina: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions: First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 6,841)	-45.29	[-188.78, 98.19]	21.37	[-124.90, 167.63]
Year Two (N = 6,580)	-46.76	[-180.34, 86.82]	-11.47	[-154.75, 131.82]
Overall (N = 7,623)	-46.04	[-180.30, 88.21]	4.60	[-138.11, 147.31]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 6,841)	-57.74	[-138.67, 23.20]	-26.72	[-65.57, 12.13]
Year Two (N = 6,580)	-28.10	[-86.97, 30.77]	-52.22*	[-98.46, -5.98]
Overall (N = 7,623)	-42.60	[-108.60, 23.39]	-39.74*	[-77.73, -1.74]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 6,841)	55.97*	[9.30, 102.65]	40.56*	[11.87, 69.26]
Year Two (N = 6,580)	39.63	[-5.70, 84.95]	38.86*	[10.24, 67.47]
Overall (N = 7,623)	47.63*	[3.70, 91.56]	39.69*	[12.51, 66.87]
Primary care visits as a percentage of total visits (higher quintile = larger percentage)				
Year One (N = 6,303)				
1st quintile	-0.24	[-3.23, 2.76]	-0.98	[-4.08, 2.12]
5th quintile	0.15	[-1.72, 2.01]	0.56	[-1.27, 2.40]
Year Two (N = 4,538)				
1st quintile	-1.28	[-4.45, 1.89]	-0.49	[-3.49, 2.52]
5th quintile	0.81	[-1.23, 2.85]	0.30	[-1.56, 2.17]
Overall (N = 6,522)				
1st quintile	-0.67	[-3.54, 2.21]	-0.78	[-3.72, 2.16]
5th quintile	0.42	[-1.40, 2.24]	0.46	[-1.32, 2.23]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 1,769)	-44.52	[-130.35, 41.32]	0.01	[-39.61, 39.63]
Year Two (N = 1,644)	20.37	[-53.22, 93.97]	27.78	[-11.06, 66.61]
Overall (N = 2,827)	-13.25	[-76.94, 50.44]	13.39	[-19.40, 46.18]

(continued)

**Table 6-15 (continued)**  
**North Carolina: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions: First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 2,194)	-10.28	[-54.11, 33.54]	13.05	[-9.24, 35.35]
Year Two (N = 2,042)	14.66	[-33.56, 62.88]	7.09	[-18.20, 32.37]
Overall (N = 3,425)	1.80	[-36.67, 40.26]	10.16	[-8.62, 28.95]
Continuity of care (higher quintile = better continuity of care)				
Year One (N = 7,243)				
1st quintile	0.42	[-1.42, 2.25]	-0.57	[-1.92, 0.78]
5th quintile	-0.53	[-2.87, 1.81]	0.64	[-0.89, 2.17]
Year Two (N = 5,327)				
1st quintile	1.26	[-0.52, 3.04]	0.83	[-0.93, 2.60]
5th quintile	-1.47	[-3.45, 0.51]	-0.88	[-2.71, 0.96]
Overall (N = 7,343)				
1st quintile	0.77	[-0.80, 2.34]	0.02	[-1.27, 1.30]
5th quintile	-0.92	[-2.84, 0.99]	0.01	[-1.39, 1.40]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with a decrease in the rate of **medical specialist visits** among demonstration beneficiaries by 39.74 per 1,000 beneficiary quarters.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **surgical specialist visits** among demonstration beneficiaries by 47.63 per 1,000 beneficiary quarters.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **surgical specialist visits** among demonstration beneficiaries by 39.69 per 1,000 beneficiary quarters.

**Tables 6-16** and **6-17** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to MAPCP Demonstration practices and two comparison groups: beneficiaries with multiple chronic conditions attributed to PCMH comparison practices and beneficiaries with multiple chronic conditions attributed to non-PCMH practices. Estimates in **Table 6-16** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

The MAPCP Demonstration also is expected to result in lower utilization of services such as all-cause admissions and ER care. **Table 6-17** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 6.6.2**.

**Table 6-16**  
**North Carolina: Comparison of average change estimates for expenditures among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 6,841)	-50.95	[-197.31, 95.41]	-28.91	[-182.50, 124.68]
Year Two (N = 6,580)	-60.07	[-183.96, 63.81]	-77.53	[-158.64, 3.58]
Overall (N = 7,623)	-55.61	[-180.41, 69.20]	-53.74	[-158.40, 50.92]
Acute-care				
Year One (N = 6,841)	7.01	[-59.39, 73.41]	-52.40	[-176.69, 71.89]
Year Two (N = 6,580)	-45.67	[-117.67, 26.34]	-60.89*	[-110.88, -10.90]
Overall (N = 7,623)	-19.89	[-82.28, 42.51]	-56.73	[-134.52, 21.05]
Post-acute-care				
Year One (N = 6,841)	-28.10	[-67.38, 11.19]	7.35	[-14.36, 29.05]
Year Two (N = 6,580)	14.61	[-14.57, 43.79]	-0.28	[-17.41, 16.85]
Overall (N = 7,623)	-6.29	[-35.07, 22.48]	3.45	[-11.13, 18.03]
ER				
Year One (N = 6,841)	2.84	[-6.08, 11.75]	1.67	[-4.99, 8.33]
Year Two (N = 6,580)	0.39	[-6.22, 7.00]	-0.24	[-5.21, 4.73]
Overall (N = 7,623)	1.59	[-5.27, 8.45]	0.70	[-4.13, 5.53]
Outpatient				
Year One (N = 6,841)	-27.23*	[-52.56, -1.90]	6.52	[-8.36, 21.40]
Year Two (N = 6,580)	-6.82	[-29.51, 15.87]	8.53	[-11.00, 28.06]
Overall (N = 7,623)	-16.81	[-37.93, 4.32]	7.55	[-7.84, 22.94]
Specialty physician				
Year One (N = 6,841)	-2.91	[-18.72, 12.90]	-7.10	[-20.61, 6.40]
Year Two (N = 6,580)	1.21	[-13.44, 15.85]	-11.77	[-31.28, 7.75]
Overall (N = 7,623)	-0.81	[-15.23, 13.62]	-9.49	[-25.20, 6.22]
Primary care physician				
Year One (N = 6,841)	-1.01	[-7.15, 5.14]	0.17	[-4.45, 4.80]
Year Two (N = 6,580)	-1.49	[-7.43, 4.45]	-4.52	[-9.37, 0.32]
Overall (N = 7,623)	-1.25	[-7.04, 4.54]	-2.23	[-6.76, 2.31]
Home health				
Year One (N = 6,841)	-2.66	[-15.09, 9.77]	11.83*	[3.16, 20.50]
Year Two (N = 6,580)	-9.50	[-19.61, 0.61]	2.77	[-5.66, 11.20]
Overall (N = 7,623)	-6.15	[-16.17, 3.86]	7.20	[-0.65, 15.06]
Other non-facility				
Year One (N = 6,841)	-0.60	[-10.04, 8.84]	-20.81*	[-34.12, -7.49]
Year Two (N = 6,580)	-9.16	[-18.96, 0.64]	-21.98*	[-34.21, -9.75]
Overall (N = 7,623)	-4.97	[-13.80, 3.86]	-21.41*	[-33.73, -9.08]

(continued)

**Table 6-16 (continued)**  
**North Carolina: Comparison of average change estimates for expenditures among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Laboratory				
Year One (N = 6,841)	-4.01	[-9.49, 1.48]	-4.28	[-8.98, 0.42]
Year Two (N = 6,580)	-1.85	[-6.90, 3.21]	-4.16	[-8.59, 0.27]
Overall (N = 7,623)	-2.90	[-8.03, 2.22]	-4.22	[-8.66, 0.22]
Imaging				
Year One (N = 6,841)	-1.73	[-4.56, 1.11]	-1.09	[-3.41, 1.23]
Year Two (N = 6,580)	-2.05	[-5.73, 1.64]	-2.03	[-4.69, 0.62]
Overall (N = 7,623)	-1.89	[-5.04, 1.26]	-1.57	[-3.97, 0.83]
Other facility				
Year One (N = 6,841)	1.42	[-0.22, 3.06]	0.74	[-0.76, 2.24]
Year Two (N = 6,580)	0.33	[-0.84, 1.50]	-0.61	[-2.53, 1.31]
Overall (N = 7,623)	0.86	[-0.39, 2.11]	0.05	[-1.39, 1.49]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There was no statistically significant difference in the *overall* growth of **total Medicare expenditures** among beneficiaries with multiple chronic conditions in NC MAPCP Demonstration practices relative to beneficiaries in either PCMH comparison practices or non-PCMH comparison practices.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a negative estimate in Year Two suggests a potential trend toward slower growth in **acute-care expenditures** among beneficiaries in NC MAPCP Demonstration practices, though the *overall* estimate is not statistically significant.

- The *overall* growth in **other non-facility expenditures** is \$21.41 slower among beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.

**Table 6-17**  
**North Carolina: Comparison of average change estimates for utilization among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 6,841)	-1.13	[-23.73, 21.46]	-0.98	[-12.97, 11.01]
Year Two (N = 6,580)	-10.52	[-34.13, 13.10]	-0.79	[-10.70, 9.13]
Overall (N = 7,623)	-5.92	[-27.77, 15.92]	-0.88	[-10.31, 8.54]
ER visits not leading to hospitalization				
Year One (N = 6,841)	16.82	[-7.52, 41.17]	7.82	[-9.47, 25.11]
Year Two (N = 6,580)	10.14	[-17.70, 37.99]	0.94	[-18.12, 20.00]
Overall (N = 7,623)	13.41	[-11.05, 37.87]	4.31	[-12.31, 20.93]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries currently attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the NC MAPCP Demonstration is associated with a change in the rates of **all-cause admissions** or **ER visits not leading to hospitalizations** among demonstration beneficiaries.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the NC MAPCP Demonstration is associated with a change in the rates of **all-cause admissions** or **ER visits not leading to hospitalizations** among demonstration beneficiaries.

Although the MAPCP Demonstration was not associated with significant changes in total Medicare expenditures among beneficiaries with behavioral conditions in demonstration practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on outcomes for this population. In the next subsection, we further explore the association between the demonstration and changes for Medicare beneficiaries with behavioral health conditions.

### **Beneficiaries with Behavioral Health Conditions**

*Tables 6-18 and 6-19* report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, for Medicare beneficiaries with behavioral health conditions in the North Carolina MAPCP Demonstration compared to beneficiaries in two comparison groups: PCMHs and non-PCMHs. Research has shown that individuals with psychosocial and substance abuse disorders have substantial unmet needs for health care. Within the medical home, significant care management and coordination resources may be required to meet the needs of these patients. There were no targeted interventions implemented in the demonstration to improve utilization of health services and quality of care specifically for individuals with mental illness and substance abuse conditions. These individuals, however, are expected to benefit from initiatives to improve access to, coordination of, and continuity of care with primary care and behavioral health providers. Network care management and clinical pharmacy services are expected to increase care coordination between primary care providers and behavioral health providers for beneficiaries with mental illnesses and substance use disorders. Improved access and care coordination could increase use of outpatient behavioral health services and primary care visits, and, in turn, more appropriate use of outpatient care could lead to decreased rates of hospitalization and ER visits (both overall and for behavioral health conditions specifically). Given the potential impact on both non-behavioral health and behavioral service use, we examined both types of service use and expenditures.

For this analysis, beneficiaries with behavioral health conditions were defined as those with at least one inpatient claim and/or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder during the 12-month period before participation in the demonstration. Using this criterion, on average about 10.8 percent of the study sample (demonstration and comparison group beneficiaries) was identified as having a behavioral health condition.<sup>2</sup> The expenditure outcomes of interest included: total Medicare expenditures, expenditures for acute hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments. The service utilization outcomes of interest included: all-cause inpatient admissions, all-cause ER visits, outpatient visits with a principal diagnosis of a behavioral health disorder, inpatient admissions with principal diagnosis of behavioral health disorder, and ER visits

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<sup>2</sup> A behavioral health condition was present in 9.0 percent of beneficiaries in the demonstration group, 10.8 percent of beneficiaries in the PCMH comparison group, and 11.3 percent of beneficiaries in the non-PCMH comparison group.

with a principal diagnosis of a behavioral health disorder. All utilization measures represent a quarterly rate of visits per 1,000 beneficiary quarters.

Estimates in **Table 6-18** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. Estimates in **Table 6-19** are interpreted as the difference in the rate of utilization associated with the MAPCP Demonstration. A *negative* value corresponds to a *decrease* in the rate of utilization, while a *positive* value corresponds to an *increase* in the rate of utilization.

**Table 6-18**  
**North Carolina: Comparison of average change estimates for PBPM Medicare expenditures among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 2,392)	-97.75	[-213.33, 17.84]	-1.12	[-89.51, 87.27]
Year Two (N = 2,320)	-6.53	[-66.32, 53.25]	-39.29	[-100.76, 22.17]
Overall (N = 2,762)	-50.82	[-122.12, 20.49]	-20.76	[-84.15, 42.62]
Acute-care				
Year One (N = 2,392)	-30.50	[-90.83, 29.82]	-4.28	[-53.84, 45.27]
Year Two (N = 2,320)	-8.41	[-52.07, 35.25]	-23.92	[-56.04, 8.20]
Overall (N = 2,762)	-19.14	[-61.22, 22.95]	-14.39	[-46.44, 17.67]
ER visits not leading to hospitalization				
Year One (N = 2,392)	-1.27	[-10.32, 7.78]	-1.86	[-8.69, 4.97]
Year Two (N = 2,320)	-1.08	[-8.97, 6.81]	-0.72	[-5.38, 3.93]
Overall (N = 2,762)	-1.17	[-7.66, 5.32]	-1.27	[-5.49, 2.94]
Total for services with a principal diagnosis of a behavioral health condition				
Year One (N = 2,392)	-5.77	[-17.02, 5.48]	-9.61*	[-15.92, -3.30]
Year Two (N = 2,319)	-2.90	[-13.86, 8.06]	-10.39*	[-16.86, -3.91]
Overall (N = 2,762)	-4.29	[-14.26, 5.67]	-10.01*	[-15.52, -4.50]

(continued)

**Table 6-18 (continued)**  
**North Carolina: Comparison of average change estimates for PBPM Medicare expenditures among beneficiaries with behavioral health conditions: First 2 years of MAPCP Demonstration**

Type of expenditure	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total for services with a secondary diagnosis of a behavioral health condition				
Year One (N = 2,392)	-47.11	[-96.83, 2.62]	-7.35	[-48.08, 33.37]
Year Two (N = 2,319)	-18.09	[-54.14, 17.95]	-24.57	[-54.50, 5.35]
Overall (N = 2,762)	-32.18	[-67.37, 3.01]	-16.21	[-44.72, 12.30]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique demonstration participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total expenditures for services with a principal diagnosis of a behavioral health condition** is \$10.01 slower among beneficiaries with a behavioral health condition in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.

**Table 6-19**  
**North Carolina: Comparison of average change estimates for behavioral and non-behavioral health care utilization among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause inpatient admissions				
Year One (N = 2,392)	-7.79	[-22.50, 6.91]	-4.20	[-14.95, 6.54]
Year Two (N = 2,320)	6.42	[-6.64, 19.48]	3.93	[-5.12, 12.99]
Overall (N = 2,762)	-0.48	[-12.29, 11.33]	-0.02	[-7.48, 7.45]
ER visits not leading to hospitalization				
Year One (N = 2,392)	22.66	[-18.87, 64.18]	2.90	[-28.61, 34.41]
Year Two (N = 2,320)	12.73	[-22.56, 48.03]	-24.39	[-54.54, 5.77]
Overall (N = 2,762)	17.55	[-15.27, 50.38]	-11.14	[-39.33, 17.05]
Behavioral health inpatient admissions				
Year One (N = 2,392)	-2.61	[-6.04, 0.82]	-2.47	[-4.96, 0.02]
Year Two (N = 2,319)	-2.87	[-6.16, 0.42]	-4.32*	[-6.45, -2.19]
Overall (N = 2,762)	-2.74	[-5.86, 0.37]	-3.42*	[-5.49, -1.35]
Behavioral health ER visits				
Year One (N = 2,392)	-2.46	[-8.56, 3.63]	-4.23	[-9.46, 1.00]
Year Two (N = 2,319)	-1.85	[-8.66, 4.96]	-5.19	[-10.76, 0.38]
Overall (N = 2,762)	-2.15	[-7.16, 2.86]	-4.72*	[-8.79, -0.66]
Behavioral health outpatient visits <sup>1</sup>				
Year One (N = 2,305)	-3.60	[-67.32, 60.12]	-0.95	[-37.66, 35.76]
Year Two (N = 2,247)	-16.72	[-71.06, 37.61]	25.24	[-12.81, 63.29]
Overall (N = 2,694)	-10.32	[-65.25, 44.61]	12.46	[-20.36, 45.29]

**NOTES:**

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes, because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with behavioral health conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with a decrease in the rate of **behavioral health inpatient visits** among demonstration beneficiaries by 3.42 per 1,000 beneficiary quarters.
- When using beneficiaries with behavioral health conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with a decrease in the rate of **behavioral health ER visits** among demonstration beneficiaries by 4.72 per 1,000 beneficiary quarters.

As reported in **Table 6-12**, the overall growth in total Medicare expenditures is \$98.33 slower for Medicare beneficiaries attributed to NC MAPCP Demonstration practices in Network 2 relative to Medicare beneficiaries attributed to all PCMH comparison practices. The overall growth in total Medicare expenditures is \$101.96 slower for Medicare beneficiaries attributed to NC MAPCP Demonstration practices in Network 2 relative to Medicare beneficiaries attributed to all non-PCMH comparison practices. In the following sub-section, we report more detailed expenditure and utilization outcomes for this population, to provide additional information about what may be driving the reductions in Medicare expenditures.

### **Beneficiaries Who Were Attributed to NC MAPCP Practices in Network 2**

There were four practices in Transylvania County from Community Care of Western NC (Network 2) that participated in the NC MAPCP Demonstration. Since beneficiaries attributed to demonstration practices in Network 2 showed significantly slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 6-20**.

**Table 6-20**  
**North Carolina: Comparison of average change estimates for**  
**selected expenditure and utilization measures among Medicare beneficiaries attributed to**  
**practices in Network 2:**  
**First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare expenditures				
Year One (N = 3,787)	-147.45*	[-199.87, -95.02]	-139.86*	[-188.65, -91.07]
Year Two (N = 4,100)	-73.35*	[-135.55, -11.16]	-96.79*	[-125.51, -68.08]
Overall (N = 4,347)	-98.33*	[-145.13, -51.53]	-101.96*	[-134.15, -69.78]
Acute-care expenditures				
Year One (N = 3,787)	-45.03*	[-64.86, -25.20]	-67.91*	[-106.85, -28.98]
Year Two (N = 4,100)	-45.92*	[-75.62, -16.22]	-59.55*	[-73.86, -45.24]
Overall (N = 4,347)	-41.14*	[-60.59, -21.68]	-53.78*	[-75.73, -31.84]
ER visits not leading to hospitalization expenditures				
Year One (N = 3,787)	-1.76	[-4.43, 0.91]	-2.46*	[-4.23, -0.70]
Year Two (N = 4,100)	7.22*	[3.95, 10.48]	5.99*	[4.62, 7.35]
Overall (N = 4,347)	2.32	[-0.17, 4.80]	1.57*	[0.42, 2.72]
Specialty physician expenditures				
Year One (N = 3,787)	-5.79*	[-12.41, 0.83]	-10.68*	[-18.25, -3.10]
Year Two (N = 4,100)	-4.64	[-11.06, 1.79]	-15.83*	[-26.49, -5.18]
Overall (N = 4,347)	-4.77	[-10.31, 0.77]	-11.69*	[-19.88, -3.50]
Primary care physician expenditures				
Year One (N = 3,787)	-13.02*	[-14.77, -11.26]	-12.56*	[-13.64, -11.47]
Year Two (N = 4,100)	-16.30*	[-18.56, -14.04]	-16.93*	[-19.04, -14.81]
Overall (N = 4,347)	-12.52*	[-14.20, -10.84]	-12.65*	[-13.99, -11.30]
All-cause admissions				
Year One (N = 3,787)	-5.05	[-11.22, 1.13]	-5.86*	[-10.46, -1.25]
Year Two (N = 4,100)	-1.80	[-7.22, 3.62]	-0.81	[-2.79, 1.16]
Overall (N = 4,347)	-3.17	[-8.55, 2.20]	-2.95*	[-5.78, -0.12]
ER visits not leading to a hospitalization				
Year One (N = 3,787)	18.42*	[8.26, 28.59]	12.54*	[6.26, 18.81]
Year Two (N = 8,914)	16.44*	[4.41, 28.47]	9.26*	[2.04, 16.48]
Overall (N = 9,729)	17.28*	[6.25, 28.31]	10.65*	[4.08, 17.21]

(continued)

**Table 6-20 (continued)**  
**North Carolina: Comparison of average change estimates for selected expenditure and utilization measures among Medicare beneficiaries attributed to practices in Network 2: First 2 years of MAPCP Demonstration**

Outcome	North Carolina MAPCP Demonstration vs. CG PCMHs		North Carolina MAPCP Demonstration vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 433)	-39.97	[-80.84, 0.90]	-27.29*	[-39.01, -15.56]
Year Two (N = 553)	-18.65	[-48.31, 11.01]	-25.25*	[-35.37, -15.12]
Overall (N = 876)	-27.72	[-59.84, 4.40]	-26.12*	[-35.20, -17.03]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to *slower growth* in expenditures relative to the CG. A *positive* value corresponds to *faster growth* relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique demonstration participants eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$98.33 slower among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **total Medicare expenditures** is \$101.96 slower among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **acute-care expenditures** is \$41.14 slower among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **acute-care expenditures** is \$53.78 slower among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.

- Relative to beneficiaries in PCMH practices, a positive estimate in Year Two suggests a potential trend toward faster growth in **expenditures for ER visits not leading to hospitalizations** among Network 2 beneficiaries in NC MAPCP Demonstration practices, though the *overall* estimate is not statistically significant.
- The *overall* growth in **expenditures for ER visits not leading to hospitalizations** is \$1.57 faster among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **specialty care physician expenditures** is \$11.69 slower among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **primary care physician expenditures** is \$12.52 slower among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **primary care physician expenditures** is \$12.65 slower among Network 2 beneficiaries in NC MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with a decrease in the rate of **all-cause admission** among demonstration beneficiaries assigned to Network 2 by 2.95 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **ER visits not leading to hospitalization** among demonstration beneficiaries assigned to Network 2 by 17.28 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with an increase in the rate of **ER visits not leading to hospitalization** among demonstration beneficiaries assigned to Network 2 by 10.65 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the NC MAPCP Demonstration is associated with a decrease in the rate of **30-day unplanned readmissions** among demonstration beneficiaries assigned to Network 2 by 26.12 per 1,000 beneficiaries with a live discharge.

### 6.7.3 Discussion of Special Populations

While North Carolina did not explicitly target specific special populations, many of the network and practice medical home activities focused on high-risk subpopulations, such as people at high risk for hospital readmission, people with multiple chronic conditions, people with

polypharmacy, patients in care transitions, and beneficiaries dually eligible for Medicare and Medicaid. Thus network care management and clinical pharmacy services, where appropriate, are targeted at these patient groups. Site visit interviewees reported that helping these patients better manage their conditions and assisting them in obtaining evidence-based care is expected to lead to more appropriate use of health services and better health outcomes, which could, in turn, result in lower rates of total expenditure growth for these patients.

None of the special populations that we identified experienced significantly slower growth in total Medicare expenditures, except for beneficiaries attributed to demonstration practices in Network 2.

We found few significant differences in the overall likelihood of receiving the process of care measures for beneficiaries with multiple chronic conditions assigned to demonstration practices relative to beneficiaries with multiple chronic conditions assigned to comparison group practices, although the significant Year Two trends on many measures suggest improvements in these measures were beginning to appear for this population in the second demonstration year. Also, the overall average decrease in the likelihood of receiving none of the four diabetes tests was significant for demonstration beneficiaries with multiple chronic conditions relative to beneficiaries assigned to comparison PCMH practices.

The rate of avoidable catastrophic events decreased among beneficiaries with multiple chronic conditions assigned to demonstration practices relative to those assigned to non-PCMH practices, but the rate of acute PQIs increased relative to non-PCMH comparison practices. Despite the increased focus on supporting patients with multiple chronic conditions by providing care management services, the rate of chronic PQIs was not significantly different for beneficiaries with multiple chronic conditions assigned to demonstration practices. Some site visit interviewees suggested that more time is needed to see the impact of care management and clinical pharmacy services on chronic illness outcomes.

We found no significant differences in the primary care visit measures for beneficiaries with multiple chronic conditions assigned to demonstration practices relative to beneficiaries with multiple chronic conditions assigned to PCMH and non-PCMH practices. This result contradicts expectations that patients with chronic conditions might have higher primary care visit rates as demonstration practices seek to manage their conditions better and prevent adverse medical events, such as PQI admissions. The rate of medical specialist visits decreased for demonstration beneficiaries relative to those in non-PCMH comparison practices, which was an expected result of the demonstration, but the rate of surgical specialist visits increased for beneficiaries with multiple chronic conditions, relative to both PCMH and non-PCMH comparison beneficiaries.

Significant results for acute-care expenditures in Year Two relative to non-PCMH practices suggest a potential trend towards slower growth in these expenditures for demonstration beneficiaries with multiple chronic conditions. Results in Year Three will determine if this trend persisted.

Although we expect practice and network PCMH activities targeted at demonstration beneficiaries with multiple chronic conditions to lower their ER utilization, we found no evidence of a reduction in the rate of ER visits not leading to hospitalization relative to

comparison group beneficiaries. These results are consistent with interviewee concerns that PCMH activities were not changing patients' ER utilization behaviors.

Among MAPCP Demonstration beneficiaries with behavioral health conditions, we found significantly slower growth in expenditures for total services with a principal diagnosis of a behavioral health condition compared to beneficiaries with behavioral health conditions assigned to non-PCMH practices. The overall average changes in total, acute-care, and ER expenditures growth, however, were not statistically significantly different among beneficiaries assigned to demonstration practices relative to beneficiaries assigned to PCMH and non-PCMH practices. Over the first 2 years of the MAPCP Demonstration, there were significant decreases in the rates of behavioral health inpatient admissions and behavioral health ER visits for the MAPCP Demonstration beneficiaries relative to the non-PCMH beneficiaries. During our Year One and Year Two site visits, interviewees at the practice, network, and state levels reported a lack of adequate behavioral health services in most communities. Despite these reports from the site visits, there are promising reductions in the rates of inpatient hospital and ER visits.

The biggest success story of the first 2 years of the MAPCP Demonstration in North Carolina came from Network 2. While we found no significant difference overall in total Medicare expenditures for demonstration beneficiaries in three networks, the overall average growth was significantly slower among demonstration beneficiaries in Network 2 relative to beneficiaries assigned to both PCMH and non-PCMH comparison practices. Further exploration of this finding showed that slower growth in acute-care expenditures accounted for roughly half of the slower growth in total Medicare expenditures, with slower growth in specialty and primary care physician expenditures also contributing. The rates of all-cause acute admissions and 30-day unplanned readmissions were also significantly lower for Network 2 beneficiaries relative to the non-PCMH comparison group. This network includes an integrated health system that conducted concerted quality improvement activities throughout the demonstration period. Furthermore, physicians in this network are highly proficient with the system's EHR, in which all quality improvement activities and related communications are based. We expected variation in measures by network because of the differences in demonstration implementation discussed earlier in this chapter.

## **6.8 Discussion of North Carolina's Year Two Findings and Next Steps**

The North Carolina MAPCP Demonstration was established in October 2011, when Medicare, BCBSNC, and the State Employee Health Plan joined Medicaid in making additional payments to practices in seven rural counties across the state and four regional CCNC networks to support medical home activities. With CCNC overseeing operations, the demonstration seeks to improve quality, access, and care coordination, and to promote appropriate utilization of resources to manage health care costs. CCNC and its networks support participating primary care practices through a centralized health IT system, care management and clinical pharmacy services, and quality improvement resources. The initiative focuses on managing transitions across care settings and analyzing data to identify the patients who would benefit most from care management efforts.

There was little evidence of significant demonstration-wide changes in outcome measures, quality indicators, continuity of care, or Medicare expenditures of MAPCP

Demonstration practices relative to the PCMH and non-PCMH comparison group practices during the first 2 years of the demonstration. Lack of significant changes associated with the demonstration were interpreted in light of several mitigating factors.

First, practices spent considerable effort in Year Two in meeting accreditation requirements for higher levels of NCQA PPC<sup>®</sup> PCMH<sup>™</sup> recognition and for BCBSNC BQPP accreditation. While such activities positioned practices for building PCMH infrastructure, they left little time to engage in actual quality improvement efforts.

Second, the establishment of the new Medicaid billing system in the state, NCTracks, altered several other core activities at the heart of the demonstration: functionality of IT systems and ability to identify Medicaid patients with multiple chronic conditions, gaps in care, prioritization of management of transitional care patients, and prevention of unnecessary ER utilization, admissions, or readmissions through care alerts. Malfunctioning of the new system paralyzed overall practice operations as well, as it severely delayed provider reimbursement.

Last, it was unlikely that the changes associated with care management and clinical pharmacy services would be observed at the population level. Care managers and clinical pharmacists target patients most likely to affect cost, utilization, and quality measures (e.g., patients with multiple chronic conditions), but the number of these patients that care managers and clinical pharmacists can work with is simply too low for statistically significant results in population-level analyses.

Moreover, network care managers historically served the Medicaid population only. While this pre-existing infrastructure and experience facilitated the extension of care management services to the new population, it also brought its own challenges. Very few additional care managers were hired to serve the new population since the beginning of the demonstration. Instead, they served the new population through increased workloads seeking to address the needs of very different groups of patients—Medicaid, Medicare, and dually eligible—and by coordinating telephonic care management for the privately insured. Understanding the needs of and how to work with these new groups of patients required new knowledge and approaches as well, all of which required time and might have resulted in reduced efficiencies.

Implementation of the MAPCP Demonstration in North Carolina varied across its networks, as the networks differ in size, infrastructure, resources, and degrees of innovation. Network 2 in the western part of the state stood out among the other networks for achieving statistically significant decreases in total Medicare expenditures, in acute-care expenditures, in acute admissions, and in 30-day unplanned readmissions. This network had a higher ratio of care managers per practice (0.6 vs. 0.3 in Networks 1 and 3) and previously established quality improvement activities, including those for palliative care.

State, network, and practice staff indicated that activities in Year Three will be dedicated to implementing specific quality improvement activities at practices to address gaps and needs informed by data reports and accreditation processes.

## CHAPTER 7 MINNESOTA

In this chapter, we present qualitative and quantitative findings related to the implementation of the Minnesota Health Care Homes (HCH) initiative, Minnesota's preexisting multi-payer initiative, which added Medicare as a payer to implement the MAPCP Demonstration. We report qualitative findings from our second of three annual site visits to Minnesota, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the association of the demonstration with changes in the five outcome domains described in *Section 1.1.2*. We also report characteristics of practices participating in the state initiative.

For the second site visit, which occurred October 28 through 30, 2013, four teams of researchers traveled across the state, covering the Twin Cities of Minneapolis and St. Paul and surrounding areas. The site visit focused on changes and implementation experiences occurring since the last site visit in October 2012. During the site visit, we interviewed providers, nurses, and administrators from participating HCHs to learn about the perceived effects of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's entrance. We met with key state officials involved with the implementation of the MAPCP Demonstration to learn how the HCH initiative, including the payment model and other efforts, such as learning collaboratives to support practice transformation, were progressing and if any changes were made to meet performance goals. We also met with payers to learn about their experiences with implementation and determine whether or not payments to practices were effective in producing desired outcomes or if modifications were warranted. Lastly, we met with patient advocates and provider organizations to learn if they had observed improvements in beneficiary experience with care and any changes in the delivery of care.

This chapter is organized by major evaluation domains. *Section 7.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in the HCH initiative. *Section 7.2* reports practice transformation activities. Subsequent sections of this chapter report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 7.3*); access to care and coordination of care (*Section 7.4*); beneficiary experience with care (*Section 7.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 7.6*); and special populations (*Section 7.7*). The chapter concludes with a discussion of the findings (*Section 7.8*).

### 7.1 State Implementation

In this section, we present findings related to the implementation of the Minnesota HCH initiative and changes made by the state, practices, and payers in the second year of its MAPCP Demonstration. We focus on providing information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?

- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors are affecting implementation?

The state profile in **Section 7.1.1** of this report, which describes the current status of major features of the state's initiative and the context in which it operates, draws on a variety of sources, including quarterly reports submitted to CMS by Minnesota HCH project staff; monthly calls with HCH staff, CMS staff, and evaluation team members; news articles; state and federal Web sites; and the site visit conducted in October 2013. **Section 7.1.2** presents a logic model reflecting our understanding of the link between specific elements of the HCH initiative and expected changes in outcomes. **Section 7.1.3** presents key findings gathered from the site visit regarding the implementation experience of state officials, payers, and providers during the second year of the MAPCP Demonstration. We conclude this section with lessons learned during the first 2 years of the MAPCP Demonstration (**Section 7.1.4**).

### **7.1.1 Minnesota State Profile as of October 2013 Evaluation Site Visit**

The Minnesota HCH initiative, under the auspices of the Minnesota Department of Health and the Minnesota Department of Human Services, was a cornerstone of the state's comprehensive health reform enacted in 2008. It was intended to transform Minnesota's primary care delivery system to improve population health, improve patients' experience of care, and reduce per capita costs. Prior legislation established HCHs intended to serve complex populations in public programs; the HCH initiative of 2008 built upon the initial design by mandating participation of Medicaid, the state employee health plan, and certain private insurers and by creating multi-payer-supported, state-certified HCHs throughout the state. Medicare joined the state initiative as a payer on October 1, 2011.

**State environment.** Minnesota's 2008 health reform legislation required, among other reforms, development of certification standards for HCHs, care coordination payments from both public and private payers, provider reporting of standardized quality measures, use of all-payer encounter data for "provider peer grouping" to enable informed consumer choice, and definitions for at least seven "baskets of care" with quality measures for each type of care episode. Development of certification standards for HCHs was undertaken by the Minnesota Department of Health, while the Minnesota Department of Human Services was involved in developing a multi-tiered payment methodology (described below) for Medicaid to use to pay participating providers.

Minnesota's primary care providers often were part of large, integrated health systems or multispecialty group practices that included nationally recognized health care leaders, such as the Mayo Clinic and HealthPartners. Only nonprofit health plans are permitted by law to sell fully insured products in the state. Self-insured employer plans, not subject to much of state law, covered roughly 40 percent of the state's population and were not required to participate in the HCH initiative. As of 2012, the state had the highest managed care penetration rate in Medicare at 47 percent.

The state encouraged the adoption and use of health information technology (health IT) through many policies and activities. For example, state law required all hospitals and other

health care providers to have an interoperable electronic health record (EHR) system in place by 2015, and providers have been required to use e-prescribing since 2011. State law also required health care providers to submit data on quality measures to the Minnesota Department of Health as part of the Statewide Quality Reporting and Measurement System (SQRMS). Providers submitted SQRMS data to a contracted measure development and data collection vendor, Minnesota Community Measurement, a multi-stakeholder organization founded by health plans. Most providers submitted these data electronically. Health plans and third party administrators also had to submit data to a multi-payer claims database. To become certified as an HCH, practices had to have searchable electronic registries.

Minnesota had several relevant programs operating in the demonstration area and across the state that could affect outcomes for participants in the MAPCP Demonstration or the comparison population:

- A Section 646 Medicare Health Quality demonstration related to advanced care planning operated in four southeastern Minnesota counties. These counties were precluded from participating in the MAPCP Demonstration, but could receive HCH initiative payments from payers in the state other than Medicare. Mayo Clinic is located in one of these counties. The demonstration began implementation in February 2010 and was scheduled to end in May 2014.
- A Beacon Community grant (beginning in 2010, now concluded) to 11 counties in the southeast region of the state focused on connecting participating providers' EHRs. The Beacon Community Program was authorized under the 2009 American Recovery and Reinvestment Act (ARRA).
- A 3-year Systems Integration Grant involving the Aging Services Division of the Minnesota Department of Human Services and the regional Area Agencies on Aging aimed to build closer connections between the HCHs and aging services. The Minnesota Board on Aging received the grant in September 2011.
- Since 2011, five community transformation grants from the Centers for Disease Control and Prevention were awarded to communities in Minnesota. Staff supported by these grants participate in prevention tracks offered as part of HCH learning collaboratives.
- A Medicaid Health Care Delivery Systems (HCDS) Demonstration, approved by CMS in August 2012, supported voluntary shared savings accountable care organization (ACO) models, rewarding groups of providers and integrated delivery systems that achieved savings for the state's Medicaid program beyond a total cost of care target and without compromising quality. The demonstration implemented six initial ACO contracts in early 2013 and three more in 2014.
- In February 2013, the state received a CMS State Innovation Models (SIM) Initiative Model Testing award, which allowed the state to expand its health information exchange and health IT infrastructure, develop a workforce of community health workers and care coordinators, and support primary care physicians who wished to

transform their practices into HCHs. Minnesota also built on the HCDS Demonstration by building ACO capacity and leveraging the three existing multidisciplinary community care teams to create “Accountable Communities for Health” to address a range of each community’s population and service needs.

- Minnesota was awarded a contract through CMS’s State Demonstration to Integrate Care for Dual Eligible Individuals to design a model to strengthen integration of Medicare and Medicaid policies governing the Minnesota Senior Health Options managed care program. The state signed a Memorandum of Understanding with CMS in September 2013 establishing their demonstration, which would run through the end of December 2016 and focus on aligning existing Medicaid and Medicare Advantage managed care programs.

**Demonstration scope.** Minnesota’s multi-payer HCH initiative operated statewide, and HCH practices in all but four counties were eligible to receive monthly care coordination payments from Medicare through the MAPCP Demonstration. For purposes of our evaluation, we considered practices that became certified as an HCH and were eligible to receive MAPCP Demonstration payments—regardless of whether or not they actually received MAPCP Demonstration payments—as “participating” in the MAPCP Demonstration. Although only a subset of eligible HCH practices had chosen to submit claims for MAPCP Demonstration fees by the end of the second year of the MAPCP Demonstration (September 30, 2013), both the state staff leading Minnesota’s HCH initiative (who conducted in-depth site visits to all practices seeking certification) and the evaluators of the state initiative (who interviewed a sample of practices that were and were not receiving MAPCP Demonstration payments) believed that it was accurate to consider practices as “participating” in the HCH initiative even if they did not receive MAPCP Demonstration payments. This is because (1) practices had transformed their delivery of care, including hiring dedicated care coordinators and offering 24/7 access to care, regardless of whether or not they received MAPCP Demonstration payments; (2) practices usually received enhanced HCH revenues from private payers that covered the cost, at least partially, of the transformation of their practice; and (3) practices engaged in enhanced care coordination activities for all of their patients, regardless of payer.

*Table 7-1* shows participation by practices, providers, and individuals in Minnesota’s MAPCP Demonstration at the end of the first and second years of the demonstration. Certification proceeded at a steady pace in the 3 years since the state began certifying practices as HCHs, but lagged somewhat behind the state’s original projections. The number of practices with attributed Medicare FFS beneficiaries that were certified, and therefore eligible to participate in the MAPCP Demonstration, was 97 at the end of Year One of the demonstration (September 30, 2012) and 136 at the end of Year Two (September 30, 2013)—an increase of 40 percent. During the same time period, the number of participating providers at these practices increased by 16 percent, from 1,468 to 1,704. The cumulative number of Medicare FFS beneficiaries who had participated in the demonstration for at least 3 months was 65,612 at the end of Year One, and 106,635 at the end of Year Two—an increase of 63 percent.

**Table 7-1**  
**Number of practices, providers, and Medicare fee-for-service beneficiaries participating in the Minnesota HCH initiative**

Participating entities	Number as of September 30, 2012	Number as of September 30, 2013
HCH initiative practices <sup>1</sup>	97	136
Participating providers <sup>1</sup>	1,468	1,704
Medicare FFS beneficiaries <sup>2</sup>	65,612	106,635

NOTES:

- HCH initiative practices included only those practices with attributed Medicare FFS beneficiaries, and participating providers were the providers that are associated with those practices.
- The numbers of Medicare FFS beneficiaries were cumulative, representing the number of Medicare FFS beneficiaries ever assigned to a participating HCH practice and participating in the demonstration for at least 3 months.

ARC = Actuarial Research Corporation; FFS = fee-for-service; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCES: <sup>1</sup>ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

Originally, the state hoped to have 340 practices certified and receiving monthly care coordination payments through the MAPCP Demonstration and to be serving more than 1.5 million beneficiaries by the end of calendar year 2013. As of September 30 2013, there were 136 practices certified as HCHs and eligible to participate in the MAPCP Demonstration. Certified HCHs were clustered in the Minneapolis-St. Paul metropolitan area, though certified clinics existed throughout the state.

Minnesota was unique in the demonstration because, rather than using an attribution method for determining MAPCP Demonstration payments, providers were required to submit monthly claims. Of the 136 certified HCH initiative practices eligible for MAPCP Demonstration payments from Medicare, only 99 (73%) chose to submit claims for these monthly care coordination payments by the end of the second year of the MAPCP Demonstration (September 30, 2013). The state's efforts to encourage certified HCH practices to bill for monthly HCH care coordination payments were only minimally successful. (We explain why many providers chose not to bill in **Section 7.2.3**.)

Medicaid, the state employees' health insurance plan, and non-ERISA (Employee Retirement Income Security Act of 1974) commercial plans were required by Minnesota's 2008 health care reform legislation to make care coordination payments to certified HCHs. Seven commercial plans were in the market. Although self-insured employers were not required to make payments, the state hoped that some would voluntarily choose to participate. The state estimated that, as of the end of the second year of the MAPCP Demonstration in Minnesota (September 30, 2013), the distribution of HCH initiative patients by payment source was 17 percent Medicare FFS; 6 percent Medicaid FFS; 19 percent Medicaid managed care; 54 percent fully insured private insurance; and 4 percent state employee group insurance program.

**Table 7-2** displays the characteristics of the HCHs participating in the MAPCP Demonstration in Minnesota as of September 30, 2013. There were 136 participating HCHs with an average of 13 providers per practice. These practices were mostly office-based (88%), with small numbers of federally qualified health centers (FQHCs) (1%), critical access hospitals (CAHs) (1%), and rural health clinics (RHCs) (10%). The majority of practices were located in metropolitan (74%) areas, with the remainder in micropolitan (10%) and rural (16%) areas.

**Table 7-2**  
**Characteristics of practices participating in the Minnesota HCH initiative as of September 30, 2013**

Characteristic	Number or percent
Number of practices (total)	136
Number of providers (total)	1,704
Number of providers per practice (average)	13
Practice type (%)	
Office-based practice	88
Federally qualified health center	1
Critical access hospital	1
Rural health clinic	10
Practice location type (%)	
Metropolitan	74
Micropolitan	10
Rural	16

ARC = Actuarial Research Corporation; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: ARC Q9 MAPCP Demonstration Provider File. (See Chapter 1 for more detail about this file.)

In **Table 7-3**, we report demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating HCHs during the first 2 years of the MAPCP Demonstration period (October 1, 2011, to September 30, 2013). Beneficiaries with fewer than 3 months of eligibility for the demonstration are not included in our evaluation or this analysis. Of the beneficiaries assigned to participating HCHs during the first 2 years of the demonstration, 28 percent were under the age of 65, one-third were between the ages of 65 and 75, a quarter were between the ages of 76 and 85, and 12 percent were over age 85, with a mean beneficiary age of 69 years. Eighty-nine percent of beneficiaries were White, 77 percent were urban dwelling, and 57 percent were female. Twenty-four percent were dually eligible for Medicare and Medicaid, and 34 percent were eligible for Medicare originally because of disability. One percent of beneficiaries had end-stage renal disease (ESRD) and 2 percent resided in a nursing home in the year before their assignment to the demonstration.

**Table 7-3**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries**  
**participating in the Minnesota HCH initiative from October 1, 2011, through**  
**September 30, 2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	106,635
Demographic characteristics	
Age < 65 (%)	28
Ages 65–75 (%)	35
Ages 76–85 (%)	26
Age > 85 (%)	12
Mean age	69
White (%)	89
Urban place of residence (%)	77
Female (%)	57
Dual eligibles (%)	24
Disabled (%)	34
End-stage renal disease (%)	1
Institutionalized (%)	2
Health status	
Mean HCC score groups	1.09
Low risk (< 0.48) (%)	24
Medium risk (0.48–1.25) (%)	50
High risk (> 1.25) (%)	27
Mean Charlson Index score	0.81
Low Charlson Index score (= 0) (%)	64
Medium Charlson Index score ( $\leq 1$ ) (%)	18
High Charlson Index score ( $> 1$ ) (%)	18
Chronic conditions (%)	
Heart failure	5
Coronary artery disease	10
Other respiratory disease	10
Diabetes without complications	16
Diabetes with complications	5
Essential hypertension	28
Valve disorders	2
Cardiomyopathy	2
Acute and chronic renal disease	8
Renal failure	4
Peripheral vascular disease	2
Lipid metabolism disorders	18
Cardiac dysrhythmias and conduction disorders	10
Dementias	1
Strokes	1
Chest pain	5
Urinary tract infection	5
Anemia	8

(continued)

**Table 7-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Minnesota HCH initiative from October 1, 2011, through September 30, 2013**

Demographic and health status characteristics	Percentage or mean
Chronic conditions (%) (continued)	
Malaise and fatigue (including chronic fatigue syndrome)	3
Dizziness, syncope, and convulsions	7
Disorders of joint	7
Hypothyroidism	6

**NOTES:**

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to an HCH initiative practice after the start of the demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid.

HCC = Hierarchical Condition Category; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: Medicare claims files.

We used three measures to assess beneficiaries' health status during the year before their assignment to HCH initiative practices—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions. Minnesota beneficiaries participating in the HCH initiative had a mean HCC score of 1.09, meaning that they were 9 percent sicker than the average Medicare FFS beneficiary or, in other words, that they were predicted to be 9 percent more costly than an average Medicare beneficiary during the year before joining the demonstration. Eighty-one percent of the population had a low score (zero) on the Charlson Comorbidity Index, indicating that these beneficiaries did not receive medical care for any of the 18 clinical conditions in the index in the year prior to their entrance into the demonstration. The most common chronic conditions diagnosed among the Medicare FFS beneficiaries were hypertension (28%), diabetes without complications (16%), lipid metabolism disorders (18%), cardiac dysrhythmias and conduction disorders (10%), coronary artery disease (10%), and other respiratory disease (10%). Less than 10 percent of beneficiaries were treated for any of the other chronic conditions in the year before entering the demonstration.

**Practice expectations.** Minnesota developed comprehensive HCH certification and recertification standards that include the following:

- HCHs must establish a system to screen patients and offer HCH services to all who have, or are at risk for, complex or chronic conditions.
- Participants must have 24/7 access to staff through an on-call provider or phone triage system.

- HCHs must use a searchable electronic registry to support care coordination, track patient care, and manage populations.
- HCHs must use a team that includes the primary care provider and care coordinator to develop a care plan and make regular face-to-face patient contact. Care coordination includes tracking admissions, referrals, and test results; post discharge planning; medication reconciliation; referring patients to community-based resources; transition planning; and linking to external care plans. Patients must have the opportunity to fully engage in planning and shared decision making.
- HCHs must have an active quality team with patient participation and a quality plan, and they must be able to measure and track change.

Practices were required to prove that they adopted all of the various HCH care processes by submitting documentation and participating in a site visit by state certifiers. Minnesota's certification process was comprehensive, including medical record reviews and patient interviews, and the team included both medical personnel and a consumer. If a practice had not fully met a particular criterion, the state had the ability to certify that practice with a "variance," meaning the practice agreed to a corrective action plan and monitoring to ensure that they came into compliance with the specific HCH standard.

At the end of their first year of certification, HCHs were required to report on certain quality measures and track at least one quality indicator. By the end of Year Two, HCHs were required to meet state-established quality benchmarks on patient health, patient experience, and cost-effectiveness measures.

As part of the first recertification process, HCHs were required to demonstrate that patients were encouraged to take an active role in managing their care and had opportunities to participate in care planning and shared decision making; that procedures and workflow could identify gaps in care and implement remedies to prevent gaps; and that processes were documented and staff identified to conduct previsit planning, call patients to remind them about needed appointments, schedule follow-up appointments for patients with chronic conditions, and use guidelines to identify patients with gaps in services. Practices seeking recertification also were required to show evidence that a registry was used actively by the care team and to demonstrate ongoing partnerships with at least one community resource (e.g., senior services, local public health, home health, assisted living, schools, or behavioral health). HCHs were required to specify their comprehensive care planning processes and to designate staff members to attend mandatory HCH learning collaboratives. Quality improvement was also a key component of the recertification process: HCHs were required to submit an annual quality plan and quality report and to submit data on one quality measure for each of three categories (improvement in patient health, quality of patient experience, and cost effectiveness).

During an HCH's second recertification, quality benchmarking was an important component. HCHs were expected to meet specific targets—developed by the HCH technical workgroup—on both improvement benchmarks and absolute performance benchmarks using unadjusted quality measure data collected statewide. Improvement benchmarks measured a practice's gains or losses on quality measures over time, while the performance benchmark

compared the absolute performance of an HCH to other HCHs. HCH practices that performed 10 percentage points higher than the state average (without risk adjustment) were considered “high achievers” on that measure, and HCH practices that performed 10 percentage points below the state average were considered “low achievers.” Failing to meet a performance target did not automatically make a practice ineligible to recertify as a HCH, but may have led the practice to be certified with a “variance” requiring them to implement a corrective action plan.

**Support to practices.** As noted above, unlike other MAPCP Demonstration states, certified HCHs in Minnesota were required to submit claims each month to receive HCH care coordination payments from participating public and private payers. Minnesota also required patients to opt-in to receive HCH services. Some practices found this process burdensome, and it is discussed in further detail later in this chapter. Practices were able to bill for care coordination services monthly, even if the patient did not have a regular face-to-face visit in the office during that month. The care coordination payments to HCHs were tiered, based on a patient’s number of chronic condition groups (e.g., cardiovascular, respiratory, or endocrine). Payments increased if a severe and persistent mental illness was present or English was not the patient’s first language. No care coordination payment was made for those without any major (as specified by the state) chronic conditions. Private payers were permitted to pay HCH practices using other payment models, such as by increasing capitation rates to cover the cost of care coordination services. By the end of the first year of the MAPCP Demonstration, 59 practices had submitted claims to Medicare for monthly care coordination payments totaling \$301,433 (with one practice receiving \$247,515 of these funds). In the second year of the demonstration, 99 practices submitted claims to Medicare totaling \$745,313 (with the same one practice again receiving \$249,860 of these funds). This relatively low payment volume resulted from a lack of provider billing for services eligible for HCH payments; we elaborate on the reasons why many providers chose not to bill in *Section 7.2.3*.

Care coordination payments made by Medicaid and Medicare are listed in *Table 7-4*.

**Table 7-4**  
**Payer care coordination payments**

<b>Tier</b>	<b>Patient complexity</b>	<b>Medicaid FFS PMPM</b>	<b>Medicare PMPM</b>
Tier 0	No major chronic condition groups	\$0.00	\$0.00
Tier 1	1–3 major chronic condition groups	\$10.14	\$10.14
Tier 2	4–6 major chronic condition groups	\$20.27	\$20.27
Tier 3	7–9 major chronic condition groups	\$40.54	\$30.00
Tier 4	10+ major chronic condition groups	\$60.81	\$45.00

NOTES:

- PMPM payments were increased by 15% if the patient was diagnosed with serious and persistent mental illness or if the patient’s primary language was not English. If both situations occurred, payments were increased by 30%.
  - Private plans were required to be consistent with Medicaid FFS but could be flexible in their payment approaches.
- FFS = fee-for-service; HCH = Health Care Homes; PMPM = per member per month.

Minnesota supported practices in adopting the HCH model in a variety of ways. Region-based nurse consultants, called “planners,” worked one-on-one with practices interested in

adopting the HCH model to provide educational tools and resources, answer questions, and help practices determine where to begin their practice transformation efforts. HCH planners also participated in certification and recertification site visits and wrote reports documenting what practices had done to meet HCH standards. Planners also connected less-advanced practices with more-advanced practices to facilitate peer-to-peer learning, and they helped to expand relationships with community groups, such as local public health, social service, and mental health organizations.

In the first year of the demonstration, the state facilitated a three-phase statewide HCH learning collaborative that helped practices transform and prepare for HCH certification and recertification. Minnesota provided technical assistance through a variety of meetings and webinars. “Learning Days” were in-person, modestly priced (\$40/person) day-and-a-half meetings held semiannually on weekdays in the Twin Cities area, which all practices were required to attend to maintain HCH certification (and at which practices regularly were asked to present). Presentation topics included care planning, recertification standards, and involving patients and their families in their care. Between these in-person meetings, Minnesota convened semiannual virtual half-day meetings, which practices attended via video conference calls or phone, or in person. The state also offered monthly webinars on various clinical topics, a four-part webinar series introducing the HCH model (available in a prerecorded format and also delivered live several times a year), and recorded webinars explaining how to bill for monthly HCH payments. The state also was in the process of awarding contracts to entities to lead five smaller “learning communities,” which would bring together four or five practices each over a 6-month period to learn about a particular clinical topic of interest to them, such as pediatric obesity prevention, care transitions, care coordination, preventive services, or population management.

The state also provided mini-grants (\$5,000) to dozens of practices to support transformation into HCHs. These grants were used for purchases of EHR systems, training, and other infrastructure investments. The state also offered expert support and technical assistance to help safety net providers (FQHCs, community clinics, and RHCs) adopt the HCH model, funded through a \$100,000 state contract.

The state developed a toolkit for care coordinators, released in August 2013, and intended to help in managing the care of Medicare beneficiaries and older adults with complex conditions. This toolkit was available online and was promoted through presentations at HCH meetings and webinars. The state believed it would be particularly useful for small and medium-sized practices.

Minnesota also provided practices with quality measure data aimed at helping them identify clinical areas to target for improvement. Although all practices in the state had access to a Web site showing how they performed on the various quality measures they were required to report under state law, HCH practices were given access to a more granular level of detail. This showed how providers performed on each quality measure and how their practice compared to other HCH practices—both in terms of absolute performance and changes since the prior year.

These “benchmarking data” were factored in when a practice applied for HCH recertification for the second time, and they were meant to guide practice quality improvement efforts. In addition, the results of more than 230,000 Clinician & Group Consumer Assessment

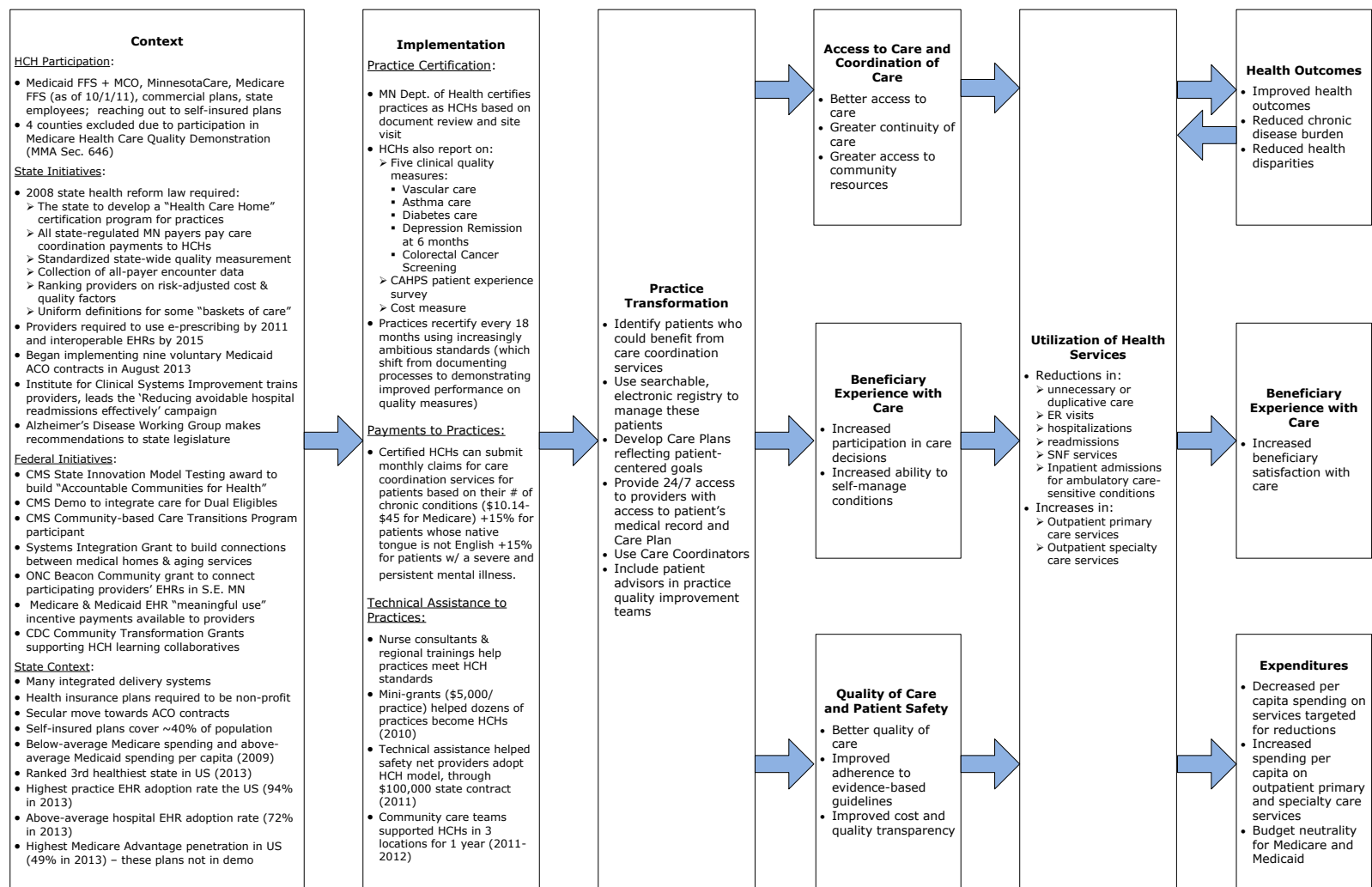
of Healthcare Providers and Systems (CAHPS) patient experience surveys from 651 clinics, including certified HCH practices, became available to the public in August 2013 on the Minnesota Community Measurement Web site for consumers, Minnesota HealthScores. The state also piloted and refined two HCH-specific quality measures. These were a care coordination measure to assess the share of patients over age 65 with an advanced care plan on file and a care transitions measure to identify the share of patients with high-risk conditions who were contacted after hospital discharge—either by phone within 3 days or through a face-to-face visit within 7 days.

Finally, in the summer of 2013, the state began providing HCH practices with monthly online practice feedback reports derived from Medicaid claims. These provided information on patients' utilization of health care services, diagnostic information, and risk information. Minnesota practices did not have access to the CMS portal, and the state did not provide practices with patients' Medicare data through other reports, although that information was provided to the state for evaluation.

### **7.1.2 Logic Model**

*Figure 7-1* is a logic model of Minnesota's HCH initiative. The first column describes the context for the demonstration, including the scope of the state's initiative, other state and federal initiatives that affected the HCH initiative, and key contextual features of the health care landscape in Minnesota.

**Figure 7-1**  
**Logic model for Minnesota's HCH initiative**



ACO: Accountable Care Organization; CMS: Centers for Medicare and Medicaid Services; ER: Emergency Room; EHR: Electronic Health Record; FFS: Fee-for-Service; HCH: Health Care Home; MCO: Managed Care Organization; MMA: Medicare Modernization Act; MN: Minnesota; ONC: Office of the National Coordinator for Health Information Technology; SE: Southeast; SNF: Skilled Nursing Facility

The demonstration context affected the implementation of the HCH initiative, which incorporated several strategies to promote HCH practice transformation. Meeting the state certification standards was intended to confirm that a practice had adopted new care processes. Beneficiaries served by these transformed practices were expected to have better access to more coordinated, safer, and higher-quality care, as well as a better patient experience with care and greater engagement in decisions about treatment and management of their conditions. These improvements were expected to promote more efficient utilization of health care services. These changes in utilization were expected to produce further changes, including improved health outcomes, improvements in beneficiary experience with care, and reductions in total per capita expenditures—resulting in savings, or budget neutrality, for Medicare and cost savings for other payers involved in the initiative. Improved health outcomes, in turn, could lead to less utilization.

### **7.1.3 Implementation**

This section uses primary data gathered from the site visit to Minnesota in October 2013 and other sources to present key findings from the implementation experience of state officials, payers, and providers to address evaluation questions described in *Section 7.1*.

#### **Major Changes During the Second Year**

**Initiative expansion.** The HCH initiative expanded significantly during the second year of implementation: 39 practice sites were added between October 1, 2012, and September 30, 2013, an increase of 40 percent. This increase was due largely to a Health Resources and Services Administration (HRSA) grant that encouraged FQHCs to seek HCH certification and a focus on capacity building in the southwest and south-central regions of the state to address geographic gaps in HCH certification.

**Resources for practices.** A Resource Workgroup for the MAPCP Demonstration examined community resources for meeting the needs of Medicare recipients and older adults with complex conditions. The group produced a Care Coordination Toolkit, releasing it on the Department of Health Web site in August 2013. The state marketed the toolkit through a webinar and a workshop that drew more than 100 attendees, and officials planned to integrate it into future workshops.

The state also altered its approach to HCH learning collaboratives in 2013. While the collaboratives were formerly regionally focused, the state shifted to offering centralized collaboratives featuring multiple concurrent workshops on different topics. One state official indicated that this change was well received: “The practices like [the centralized collaboratives] because the big systems can learn from big systems and smaller clinics can learn from smaller clinics.”

#### **Major Implementation Issues During the Second Year**

**Ongoing billing challenges.** The major implementation issue in Year Two was the choice by many HCH practices not to submit claims for monthly care coordination payments. As one payer said, “The feedback we hear from our contracted providers is that the billing is challenging, the tiering is challenging, and there’s an exceptional concern about not overstating the complexity of a member [for auditing and compliance reasons].” As a result, providers had “under-scored and not billed for folks because of the burden on regulatory compliance, auditing,

and the amount of reimbursement didn't account for the actual time to do the billing, let alone doing the care." Another payer in the state corroborated this explanation: "Some of what we're hearing back from the providers is that the remuneration isn't worth the work [of billing for HCH services] under the existing model." As a result, billing for care coordination lagged behind expectations. (We elaborate on the reasons why providers chose not to submit HCH claims later in **Section 7.2.3.**)

State leaders were aware of the problems with the state's payment model and explored potential solutions. The Department of Human Services released a brief memo in August 2013 to HCHs and other interested stakeholders outlining the initiative's billing issues and requesting feedback on proposed solutions. In the memo, the state suggested modifying the initiative's complex tiering structure or streamlining the claims submissions process (Minnesota Department of Human Services, 2013).

Despite these challenges in billing for HCH care coordination services, practices saw the value in achieving certification and implementing the HCH model. As one state official noted, "I hear this over and over from the clinics—they say they have found value in using the [HCH] standards as a guideline and in having to show someone that they're doing the work. We get a lot of positive feedback from our site visits." An informant from a HCH practice described the merits of the HCH model and certification: "As far as strengths, [the HCH model is] a great team-care model. It's more than just the provider and patient. We can get social work and care coordination involved. It's just a broader team-based model. Being certified as a Health Care Home pushed us further in that direction."

**Meeting technical assistance needs.** A lesser challenge faced by the state was tailoring its technical assistance to an increasingly wide variety of practices, as participating practices had a wide range of experience and skill levels. One state official explained that providing a curriculum useful for HCHs in various stages of implementation was not easy: "We struggle with providing experiences that are meaningful for both ends of the spectrum, and everything in between."

With respect to technical assistance for certification, a state staff member told us their biggest challenge in the future would be helping the remaining practices in the state adopt the HCH model: "We've gotten the low-hanging fruit; we need to think about those next clinics, [who] are going to be harder because they weren't the early adopters." They also planned to focus on helping FQHCs adopt the HCH model, though most already had been certified as a result of an HRSA grant that incentivized adoption of the HCH model.

**Information technology challenges.** Despite a statewide mandate for providers to adopt interoperable EHR systems by 2015, health IT systems remained a major implementation concern. The state had worked to ensure that practices' electronic registries were working properly and that clinics were using EHRs effectively. (We elaborate on how providers used EHRs later in **Section 7.8.1.**)

At the state level, the Department of Health had its own IT difficulties and struggled with recruitment and retention of IT personnel. One state official indicated that this had slowed down the HCH recertification process, which relied on a state-maintained Web-accessible database. Another official remarked on the challenges of developing and finding resources to support

Web-based tools that collect data, such as those used in the state's HCH recertification process: "We need the [IT] infrastructure to be more robust and easier to use. ... Getting a Web-based tool where you're collecting a lot of data is really challenging, and everyone wants to use it differently."

## **External and Contextual Factors Affecting Implementation**

**Impact of other health reform initiatives.** The health care landscape in Minnesota remained dynamic, with a number of concurrent reform initiatives commanding resources and attention. Providers and private payers in the state continued to adopt ACO-style "total cost of care" payment arrangements, and many providers also entered into ACO contracts through the Medicare Shared Savings Program and the state's Medicaid-based ACO initiative, the HCDS Demonstration. Many clinics participating in the HCDS Demonstration also were certified HCHs.

The state also leveraged a SIM Model Testing grant to support multi-payer payment and delivery system reform. The SIM work was aimed at aligning market signals to providers. One state official told us that HCHs were "a foundational component to the other work that we do and the work that we anticipate doing through SIM." Another state official cautioned, however, that the move toward ACOs affected the decisions of HCH clinics: "Our state is zooming along so quickly related to ACOs, and there are clinics that, because of shared risk and gain, are nervous about taking care coordination payments up front—they want to see how they'll do with quality and cost first." By accepting monthly care coordination payments, along with their other FFS payments, such practices would have had a harder time demonstrating reduced expenditures and qualifying for shared savings payments from payers.

### **7.1.4 Lessons Learned**

Several key lessons emerged during the second round of site visits.

**A balanced approach to soliciting stakeholder input would have been helpful.** A multi-stakeholder process was important; one state-level informant cautioned, "You can't underestimate the degree of community engagement that you're going to need to do." This interviewee suggested prioritizing *which* programmatic decisions required stakeholder input and consensus and which could be made by the initiative conveners, to avoid slowing decision making or engaging in unnecessary bureaucracy.

**Payment models needed to evolve.** Health systems and physicians recognized the value of team-based care. The broader move toward ACO-style "total cost of care" payment models left some payers and providers uncertain about how FFS-based models like HCHs fit in. In addition, the large number of practices choosing not to bill for HCH payments not only resulted in needed resources not reaching practices, but also made it difficult for payers to identify which patients had received HCH services and whether these services had a positive impact. As a result, one payer suggested that "some other method to track engagement, to see if it really is effective" was needed.

**Program administrative resources were underestimated.** The state could have benefitted from additional resources to fund implementation. One state staffer told us, "There

were no dollars allocated to states to implement the demonstration,” and suggested that support from CMS for staff and other administrative costs would have been beneficial.

## **7.2 Practice Transformation**

Overall, the practices we interviewed were consistently enthusiastic about the HCH delivery model and consistently unhappy with the HCH payment model—though they had different ideas about how to improve the state’s payment approach. Some recommended refining the HCH tiering tool, which was used to determine payment rates based on patient complexity, to capture more accurately patients with a small number of chronic conditions who nevertheless were quite complex. Some suggested moving to a flat per member per month (PMPM) fee for all patients, while some suggested that Medicaid and Medicare adopt an ACO-style shared savings payment approach for HCH payments. Some suggested providing start-up grants or loans, especially for smaller practices. Practice staff consistently advocated for raising HCH payment rates; several physicians suggested doubling these rates.

In terms of the delivery model, providers liked having a care coordinator to field questions from patients by phone instead of during unnecessary visits, to connect patients with social services, and to free up time for providers to engage in longer appointments with more complex patients. Practice staff often found their work more rewarding now, and their patients happier. Several practices reported that they had attracted new patients through referrals from satisfied current patients, and one practice indicated that this had doubled their patient panel. Some providers also liked being a HCH practice because it made them feel like they were at the cutting edge of delivery system reform.

The big drawback for practices was finding time to devote to HCH activities, since interviewees uniformly thought that HCH payment rates did not cover their HCH costs (though this was less of an issue in practices with ACO contracts, which were common in the Twin Cities area). Several practices found it burdensome to spend time convincing patients to opt-in to the HCH program and to modify their billing systems to bill for monthly HCH care coordination payments. Despite these problems, practices still were glad to receive the payments they did get, and they worried about what they would do once the MAPCP Demonstration ended and payments ceased.

Another drawback to the HCH initiative was the amount of paperwork involved in obtaining and maintaining HCH certification, which some felt could be done less frequently than the current annual requirement. Practices also wished that technical assistance could be streamed into different tracks, depending on a practice’s size and HCH maturity level. Practice staff thought more state-sponsored training opportunities for care coordinators also would be helpful.

### **7.2.1 Changes Practices Made During Year Two**

**Patient-centered medical home (PCMH) recognition and practice transformation.** The state continued to certify practices as new HCHs during the second year of the demonstration, but recertification of existing HCHs was a much more prominent activity in Year Two. Recertification was required annually by the HCH legislation. Some practices felt that starting recertification after 9 months and concluding it at 12 months did not give them enough time to make changes that they had planned or to show the effects of some of the transformations

they had made. In response to these concerns, the state adjusted the timeframe to allow practices up to 15 months to complete the recertification process. Other practices thought that, for the first few years of an activity like the HCH initiative, annual recertification was a good thing. One practice explained, “We’ve learned a lot from our recertification every year,” since it gave them a chance to see what they did well and what they might need to “tweak.” Practices felt that, even after they had been certified, they still were constantly changing. After a practice had been recertified successfully and operated as an HCH for several years, one practice thought it might be a good idea for the state to “put it off for a few years.”

Of all the changes practices undertook to become HCHs, the addition of the care coordinator seemed to be the most central element. On the basis of our interviews, it appeared that practices used these care coordinators in increasingly sophisticated ways since the 2012 site visit. Initially, practices used care coordinators for a wide range of activities, including previsit planning. Practices felt this was very important because it increased patients’ chances of getting the appropriate set of preventive services they needed and allowed more efficient use of the physician’s time during visits. Over time, however, some practices concluded that this was not the best use of care coordinators’ time, and they assigned this activity to lower-level staff (e.g., medical assistants as opposed to registered nurses [RNs]). One practice thought that previsit planning was “a very big piece, [but] it’s just [that] we’re trying to move that away from the care coordinator, because we want them to be able to focus more on the care coordination.” Practices varied widely in how they used care coordinators, though, and some continued to use them for previsit planning.

Higher-level care coordination activities that practices focused on included developing care plans (which included a summary of the most recent care provided by external providers), improving patient education, arranging specialty care and managing transitions from hospitals, helping patients acquire durable medical equipment, obtaining prior authorizations from insurers, working with pharmacies to conduct medication reconciliations, and communicating with families to keep them updated. During the 2013 site visits, practices seemed to place a greater emphasis on care plans than they had during the 2012 site visits. Referring to care plans, one practice staff person said, “Before we were doing them [for some patients who needed them], but now we are at about 95 percent.” Practices also reached out to families to make sure they understood the nature of these care plans. One physician felt it would be better for him to be in the room when the care plan was discussed with the patient, but recognized that “there is only so much time.”

Patient education aimed at better self-management of chronic conditions was progressing and characterized as a “big deal,” but still seemed to be a challenge at some practices. Practices wanted to make sure that patients understood the fundamentals of the HCH concept, including how to access the 24/7 telephone services they offered. Most practices went well beyond this. One practice implemented the Stanford chronic disease self-management model and found it to be a big success. They said, “Patients tell us, they feel like they have some control over their health and they feel like they have done some things that they can do to improve their situation. They are picking things like exercise goals that they are going to do and then they come back the next week and have met them.” Another practice indicated that patient self-management is “something we’d like to do more, [but] it’s been hard for us to get the ball rolling.”

Care coordinators also were used to track patients as they moved through the health care system. One practice with several coordinators indicated that each had a range of responsibilities, because “Now we follow up ER [emergency room] visits that they have, any hospital stays, any upcoming surgeries, any referrals—we’re constantly following that.” The evolution of this process was evident at one HCH that explained, “Before we knew they were in the hospital. Let’s say they had their knee done. Now we know ahead of time when that date is, and we can make sure that they have their history and physical—anything that’s really needed for that, we follow up with them.” In the last year, that practice implemented a process of telephone follow-up calls for surgical patients, starting about a week after they left the hospital, to make sure patients were “doing alright” and confirm that patients knew when they had to come in for a follow-up visit.

Practices still found that it took extra effort to get the information they needed from hospitals. We were told that some hospitals were unwilling to send information routinely about a practice’s patients when they were in the facility or after discharge. Even for those practices that could get information, it required a significant effort; one practice’s “care coordinator RNs went to every hospital we work with and met with the emergency room staff, the discharge planners, etc., to talk about transitions of care.” They said, “We sometimes don’t even know why our patient goes into the hospital. So just being notified is a big effort. We cover a large geographic area: there are 22 different hospitals that our patients use. Our nurses spend a lot of effort establishing relationships with hospitals.”

Not all practices were using their care coordinators in the same way, and this led to substantial variation in the number of patients each care coordinator oversaw. In a practice whose care coordinators focused on tracking patients’ care, each one was assigned about 150 patients. In another practice that used the coordinator for a wider variety of administrative activities as well as care coordination, only 75 patients were assigned to that individual. Another practice assigned 75 to 90 patients to each care coordinator, but acknowledged that “it really depends on the complexity of the patients.” They said that they would “love to know what the magic number is” in terms of care coordinator patient panel size.

The types of individuals hired as care coordinators varied considerably across practices. Some seemed to favor using RNs in this role, while others used licensed practical nurses (LPNs), medical assistants, or social workers. One practice that had used medical assistants and social workers was “trying to bring the RN back in, and that’s a big culture change.” In a practice that mostly used LPNs, “the RN/LPN debate has been a big one in the organization. The RNs are capable of a lot more than the LPNs are, and it’s clearly a training issue. So we’ve attempted to put the RNs in the more demanding sites and more difficult patients.” That practice also “kicked around the idea” of using a Somali community health worker who would be in a strong position to connect with their Somali patients as a care coordinator, but had not yet acted on that idea. We were also told that, “You can’t, across the board, label all of our high-performing care coordinators as the RNs.” That practice emphasized that “you have to also look at the individual person, their life experience, their maturity, and what they’re ready for.”

One patient advocate recognized the variation across practices, but did not consider this a positive aspect of the HCH initiative. This person felt “it was a point of concern” that “there is no minimum requirement for who can do the care coordination.” This was an issue because it could affect “the level of assistance people are going to get, based on the level of knowledge and experience the person has in the clinic that’s actually doing the care coordination.” This advocate

felt “that there is a great need for education of the people who are doing the care coordination, so that they understand what care coordination really is—that it's not necessarily setting up the next appointment.... The providers have not gone down this road before; this is something very, very new.”

The HCH standards required that practices offer real-time access to a practice staff member 24/7, and the staff member on call had to have access to the patient’s medical record and care plan. Practices had to meet this requirement as a part of initial HCH certification, so many already had implemented 24/7 access during the first year of the MAPCP Demonstration. Other practices continued to work on this access requirement during the second demonstration year. Of the practices that had fulfilled the 24/7 access requirement successfully, most implemented a call center staffed by clinicians and triage nurses on a rotating basis. Although many practices offered 24/7 access, most reported that their patients remained largely unaware of its availability. In response, some practices launched educational campaigns to inform them about this service.

**Practice staffing changes.** Many practices made refinements to their staffing model as they gained more experience with the HCH model—hiring care coordinators with different skill sets than they had previously employed, or changing care coordinators’ job duties. Care coordinators most commonly had a back-room role, focused on calling patients to remind them to schedule appointments for preventive services or to make sure medications were being taken. In more advanced practices, care coordinators also regularly met with patients—for example, to modify and titrate medications and engage patients in setting goals and getting “into some of that psycho-social-type stuff that might be influencing a patient’s chronic illness.”

One practice noted that HCH certification required them to move away from having disease-specific care coordinators and instead to have them engage in general care coordination for a variety of conditions. One physician said that this shift was “not necessarily a good thing.” Focusing on particular conditions also was valued by an integrated delivery system that was in the process of adding disease-specific nurse care coordinators to their care teams. They worked with patients with diabetes, vascular issues, and depression (conditions for which all practices reported quality measure data under state law), while existing care coordinators engaged in general population management activities, such as reminding patients to schedule preventive services.

Several practices thought that hiring care coordinators with the right personality and temperament was crucial—even more important than clinical training. One practice felt that having a “nurturing” personality was paramount and hired two medical assistants with this character trait. The medical assistants then brought in a part-time RN as needed for screenings, brief interventions, and referral to treatment for alcohol abuse and depression. An integrated delivery system said that care coordinators needed to be emotionally resilient and able to handle the stress of helping patients during times of crisis, while also being skilled in connecting patients to community resources.

**Health information technology.** Although Minnesota was known for having a high EHR adoption rate, the state learned that practices often did not use these technologies effectively. Indeed, some practices said they were only beginning to use their EHR’s registry feature and clinical decision support prompts, and they were doing more advanced querying to create more specific lists of patients in need of follow-up. Staff at a larger, more mature HCH practice said

that even they continuously refined their EHR—with a current focus on making electronic care plans a “live” document that could be edited over time, instead of a document that had to be filled out from scratch each time it was updated.

Most practices made minor adjustments in their use of their EHR. Physicians at one multisite practice, however, underwent a larger paradigm shift: “When we first rolled the tool out, we tried to change it to work the way we wanted it to work, rather than do the difficult job of changing how *we* do work. And we [recently] realized that we have reached the limit of our ability to be efficient with our EHR using it that way, and have to readdress the fact that we have to use the tool the way it was designed—which means we have to reevaluate our processes and procedures so they’ll match the tool to be more efficient.”

Most practices typically exchanged patient medical records by giving other providers access to a Web-based version of their EHR, e-mailing records, or faxing them. Several practices had installed, or were in the process of installing, software that allowed incoming faxes to be converted automatically into Adobe Portable Document Format files and added to patients’ medical records.

Since most hospitals in the Twin Cities area used Epic’s EHR, several practices were adopting that same system to facilitate sharing information with consulting specialists and hospitals in the area. One multisite practice said that securing funding to purchase an Epic EHR was a major motivator for their decision to join a larger health care system, since buying Epic otherwise would have consumed 20 percent of their practice budget. Under their new alliance, the larger system would pay this cost. The purchase of Epic also was motivated by the fact that the practice began losing patients, who left because they wanted “to have all their records in one place.” Indeed, another health system using Epic noted that they were starting to encounter new patients asking on their first visit about how to sign up for Epic’s patient portal.

That said, providers learned that simply buying Epic was not a magic bullet. One practice found that after they purchased this software, their local hospital still would not give them permission to connect to their Epic EHR. One health system found that having a different version of Epic prevented them from exchanging data with another system on Epic.

Many practices gave their patients access at least to a partial set of their medical records through an online patient portal, and several allowed patients to schedule appointments through these Web sites. Practices had different experiences with these Web sites. Several said their patients regularly used the portal to check on laboratory results, but one thought their patients generally did not use the practice’s portal. Practices generally found that patients were not interested in scheduling appointments through their Web sites.

Providers often had Web-based access to their patients’ medical records, and several explained that they used their Web-based EHR after-hours when responding to patient calls. Similarly, a state official said many providers had access to their practice’s EHR on their smart phone, to satisfy the HCH requirement that they have after-hours access to their patients’ medical records.

Practice staff were positive about EHRs, on net. As one physician put it: “I think if you ask doctors [if] they feel like they’re working harder in the EHR environment, they would say

they are working harder—it is harder work. But if you were to say: Are you documenting better? Yes, you are. Are you able to find records better? Yes, you are. Are you able to be more organized in your visit? Yes, you are.” Moreover, on the basis of a survey fielded by this practice, their patients also thought having an EHR was a plus.

### **7.2.2 Technical Assistance**

We heard generally positive feedback about the state’s mandatory, semiannual, in-person “Learning Days” meetings. State staff said that the last such meeting was attended by 350 people, representing all certified practices in the state, plus other community groups, and that practices were actively involved and engaged in good discussions during the sessions. According to this state staffer, practices most enjoyed the fact that practice staff gave presentations at these meetings, thus allowing providers to learn from each other. Several practices also mentioned that they informally mentored other practices as they adopted the HCH model. As noted earlier, the state had shifted from smaller regional meetings to larger, more centrally located meetings in the Twin Cities area, with concurrent sessions that practices could choose, depending on their needs. State staff also offered more in-person meetings and fewer webinars, since “people wanted the face-to-face.” Although feedback on the in-person meetings generally was positive, both large, advanced practices and smaller, less-advanced practices felt HCH technical assistance would be more useful if the state separated practices into cohorts based on their practice size and HCH maturity level.

Practice staff applauded the state for seeking regular feedback from practices about topics to cover in their technical assistance meetings and webinars. Using a variety of methods—including a survey the state fielded every 18 months, asking practices for suggestions during in-person certification site visits, asking HCH planners which HCH standards practices were struggling to meet, and looking for trends in variances and state-collected quality measure data—the state worked to identify topics on which technical assistance would be beneficial.

Several practices suggested that additional training for care coordinators would be helpful. A state official reported that small and medium-sized practices were beginning to use the new HCH Care Coordinator Toolkit launched 2 months before the site visit, while another interviewee thought many providers were not yet aware of it and that further education and promotion efforts were needed. A staff member at a mature HCH practice observed that the toolkit, while helpful, was “too little, too late,” since many practices already had figured out how to coordinate care for their patients and implemented the processes and tools they needed.

### **7.2.3 Payment Support**

As noted earlier, many HCH practices did not bill Medicare or Medicaid for the monthly care coordination payments to which they were entitled. The state was aware of the large number of practices that did not receive HCH payments from Medicaid and Medicare, and its state-based evaluators fielded three practice surveys to better understand why this was occurring. Our interviews indicated numerous reasons:

- Practices did not know how to use the new billing code created by the state to allow practices to bill for HCH claims or did not know how to link this code to their primary clinic number.

- Practices found it burdensome to spend time convincing patients to opt-in to the program.
- The cost of spending time modifying a practice's encounter-based billing system sometimes outweighed the revenues that would accrue when a practice only had 10 to 15 traditional Medicare patients (half of the state's Medicare beneficiaries were insured through Medicare Advantage plans).
- Practices found it burdensome to identify a patient's insurance and determine whether they were eligible to receive MAPCP Demonstration payments for providing the patient with care coordination services.
- Practices did not know how to generate a monthly bill from their EHR.
- Practices would have had to add structured fields to their EHR to have the variables needed to generate queries identifying all patients eligible for HCH payments.
- Claims for elderly patients in nursing homes who used their children's out-of-state mailing addresses were improperly considered ineligible for HCH payments.

The results of the state's practice surveys, which are more comprehensive than our interview findings, were available in a report released by the state in early 2014 (Wholey, Finch, White, et al., 2014), and may have led to changes in the state's payment approach. State leaders were aware of HCH payment problems and explored potential solutions.

Given the ongoing payment issues, the HCH initiative benefitted from the fact that ACO-style contracts became popular among commercial payers we spoke with in the Twin Cities area, where many HCH practices were clustered, and were being implemented in Medicaid through a demonstration. Such contracts allowed many providers—particularly those that were part of larger health care systems, which are pervasive in Minnesota—to benefit financially from adopting the HCH model even if they did not bill for monthly HCH payments. Meanwhile, some practices had found other ways to support their HCH efforts. A small practice relied on small grants and unpaid student interns from local nursing and social work programs to serve as care coordinators, and an RHC paid for its HCH care coordinators primarily through cost-based reimbursement.

Practices and private payers uniformly thought HCH payment rates were not generous enough. Even a practice receiving all of the HCH payments to which they were entitled from all available payers found that these revenues were insufficient to cover the cost of all of the care coordinators they hired. Practices also said some up-front start-up money to implement the HCH model would have been helpful; one private payer provided such start-up grants to qualifying practices.

Several interviewees—including both providers and payers—believed the HCH tiering tool used to identify a patient's payment rate needed to be refined, but not abandoned. As noted earlier, they felt it needed to capture more accurately those patients with a small number of chronic conditions who nevertheless were quite complex, such as patients with numerous neurological or cardiovascular issues.

Interviewees uniformly believed that payment difficulties did not cause practices to abandon the HCH model, since many practices either were in ACO-style contracts, adopted the HCH model out of a fear of losing patients, or felt it was the right thing to do to improve provider and patient satisfaction. This did not mean that providers were happy with their financial situation. One particularly frustrated physician complained, “We’re supplying all the manpower and all the money to save the system money, but we get nothing in return. There’s nothing in it for us except to do the right thing.” Another said, “Not many places would sign up to lose as much money as we have!”

#### **7.2.4 Discussion of Practice Transformation**

Consistent with last year, many HCH practices did not bill Medicare and Medicaid for monthly HCH care coordination payments to which they were entitled. Instead of submitting HCH claims, some practices relied on private ACO contracts to cross-subsidize their Medicare and Medicaid HCH patients. Others simply lost money, but stayed with the HCH model out of a desire to do the right thing for patients, a fear of losing market share, or because the HCH model improved their staff and patient satisfaction.

Although practice staff had issues with the HCH payment model, they were uniformly enthusiastic about the HCH delivery model. Practice HCH activities centered on care coordinators, who tracked and documented the care received by HCH patients from other providers, using a document called a care plan. Care coordinators typically also fielded questions from patients by phone instead of during unnecessary visits with providers, connected patients with social services, and freed up time for providers to engage in longer appointments with more complex patients, among many other possible tasks.

Practices usually spoke positively about the technical assistance offered by the state to HCH practices, but many practice staff clearly wanted to separate large practices that had adopted the HCH model several years ago from small practices that were just beginning to adopt the model and to tailor technical assistance curricula to their different needs.

### **7.3 Quality of Care, Patient Safety, and Health Outcomes**

#### **7.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

Over the past year, HCH practices engaged in several activities with the potential to improve care quality, increase patient safety, and improve patient health outcomes. These included, most notably, the increased and improved use of patient registries and other health IT activities, care coordination, and the measurement, reporting, and analysis of quality data. Unlike other activities ostensibly occurring before the launch of the HCH initiative, the use of registries and care coordinators seemed to be linked explicitly to the HCH initiative.

The sophistication of practices’ registries varied. Some practices effectively used EHRs to create patient registries, while others created manual workarounds using an Excel spreadsheet or something similar. One common usage of registries was generating a list of patients with specific conditions who were due for a follow-up appointment. Care coordinators or other practice staff used this information to conduct targeted phone calls, which they perceived as beneficial in improving appropriate utilization of care. For example, one practice told us that the

registry enabled them to more effectively identify and communicate with patients needing a certain preventive service. Although some practices struggled with using registries, all seemed to have improved since the 2012 site visit.

The use of care coordinators was generally identified as an activity with great potential for improving patient health outcomes. Several practices also described using various screeners to identify potential areas for follow-up with an individual patient, but it was not clear that this activity was linked to the HCH initiative specifically. Through an increased focus on care coordination, some practices became aware of potential areas for improvement in quality of care. For example, a care coordinator at one practice observed that patient needs could be addressed by having a pharmacist on staff. In response to this need, the practice hired a pharmacist.

Several clinics described a focus on quality measurement and reporting as a result of adopting the HCH model. Some clinics held informal staff meetings where quality measurement scores were discussed with the group. A nurse practitioner at one practice described this as follows: “[The clinic manager] brings [the quality measurement data] to the group and then we discuss it and identify gaps where we need to make improvements.” Generally, practices did not make significant changes to improve quality specifically through the HCH initiative, but they described an atmosphere in which staff members paid more attention to measures and had a greater appreciation for quantitative data. Some practices stated that even before the HCH initiative, they engaged in certain activities to improve care (through care coordination, care plan development, etc.), but noted that HCH provided the impetus to document these activities systematically.

Some specialty clinics with unique patient populations said that the quality measures collected through SQRMS and used by the HCH initiative for recertification were inappropriate for their patient populations. For example, a practice with many elderly patients did not focus on making sure its patients received colorectal screenings (colorectal screenings are not recommended for individuals over age 75), and therefore received very poor quality scores in this area. Additionally, several practices indicated that they did not place much value on the data provided through SQRMS, since these data were not risk adjusted. Some practices also described difficulties in using their EHR systems to document accurately and extract quality data, which negatively affected their scores.

Although evidence of increased delivery of preventive services and improved health outcomes was mostly anecdotal, several state staff members cited the results of a study funded by the Agency for Healthcare Research and Quality (AHRQ) and focused on the process of transformation and outcomes for a small set of early adopter HCH practices. Conducted by the HealthPartners Research Foundation in collaboration with state and health plan partners, this study found that certified HCHs performed better than other practices in the state on certain clinical quality measures related to diabetes and cardiovascular disease (Solberg, Crain, Tillema, et al., 2013). Additionally, the state-sponsored HCH evaluation by the University of Minnesota found that, compared to practices not certified as HCHs, certified HCH practices performed better on most quality measures collected through the SQRMS, including colorectal cancer screening, asthma care, diabetes care, and depression follow-up (Wholey, Finch, White, et al., 2014).

### 7.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization measures. The results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in *Section 7.3.3*.

**Process of care measures.** *Table 7-5* reports covariate-adjusted differences in several process measures that indicate quality of care across the MAPCP Demonstration group and one comparison group: non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures that address whether beneficiaries received all four of the recommended actions in diabetes care or none of the quality actions, respectively. The last indicator, on whether a beneficiary received a total lipid panel, follows the care guidance for patients with ischemic vascular disease (IVD).

We examine the probability of receiving the recommended services. These dichotomous (yes/no) indicators are modeled using logistic regression models. Estimates in *Table 7-5* are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. HCH initiative beneficiaries are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

**Table 7-5**  
**Minnesota: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
HbA1c testing		
Year One (N = 10,652)	1.02	[-0.43, 2.47]
Year Two (N = 3,555)	0.93	[-1.17, 3.02]
Overall (N = 10,890)	1.00	[-0.47, 2.46]
Retinal eye examination		
Year One (N = 10,652)	3.04*	[0.52, 5.57]
Year Two (N = 3,555)	0.33	[-2.96, 3.62]
Overall (N = 10,890)	2.36	[-0.08, 4.80]

(continued)

**Table 7-5 (continued)**  
**Minnesota: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
LDL-C screening		
Year One (N = 10,652)	0.68	[-1.08, 2.44]
Year Two (N = 3,555)	3.06*	[0.38, 5.73]
Overall (N = 10,890)	1.28	[-0.40, 2.95]
Medical attention for nephropathy		
Year One (N = 10,652)	4.65*	[0.78, 8.52]
Year Two (N = 3,555)	4.60	[-0.21, 9.41]
Overall (N = 10,890)	4.64*	[0.86, 8.41]
Received all 4 diabetes tests		
Year One (N = 10,652)	5.88*	[1.74, 10.03]
Year Two (N = 3,555)	2.34	[-2.88, 7.55]
Overall (N = 10,890)	4.99*	[0.95, 9.04]
Received none of the 4 diabetes tests		
Year One (N = 10,652)	-0.07	[-0.46, 0.32]
Year Two (N = 3,555)	-0.82	[-1.66, 0.01]
Overall (N = 10,890)	-0.26	[-0.67, 0.15]
Total lipid panel		
Year One (N = 14,222)	-1.12	[-3.24, 1.00]
Year Two (N = 4,376)	-1.19	[-4.49, 2.11]
Overall (N = 15,175)	-1.14	[-2.97, 0.69]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique HCH participants eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; HCH = Health Care Homes; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a positive trend toward receiving an **LDL-C screening**, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the HCH initiative is associated with an increase in the likelihood that MAPCP beneficiaries received **medical attention for nephropathy** by 4.64 percentage points.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the HCH initiative is associated with an increase in the likelihood that MAPCP beneficiaries received **all four diabetes tests** by 4.99

percentage points, compared to non-PCMH comparison practices. Given the lack of statistical significance in Year Two, however, it is unclear whether this association will persist into Year Three.

**Preventable hospitalization measures.** Aside from studying processes of care, largely based on evidence-based guidelines, we also evaluated patient outcomes among HCH initiative and comparison practices. Some patient medical events, such as those measured with Prevention Quality Indicators (PQIs), may be preventable with adequate access to high-quality primary care services. We defined avoidable catastrophic events as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, chronic obstructive pulmonary disease (COPD) or asthma in older adults, asthma in younger adults, hypertension, and congestive heart failure (CHF). The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 7-6** below reports covariate-adjusted differences in these patient outcome measures.

We examine differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters in **Table 7-6**. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improvements in the quality and access to ambulatory care, we expect MAPCP Demonstration beneficiaries to have reduced rates (i.e., a significant negative value) of these avoidable hospitalizations.

**Table 7-6**  
**Minnesota: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>		
Year One (N = 63,391)	0.04	[-0.74, 0.82]
Year Two (N = 96,551)	0.01	[-0.85, 0.87]
Overall (N = 106,616)	0.02	[-0.72, 0.76]
PQI admissions—overall <sup>2</sup>		
Year One (N = 63,391)	-0.37	[-1.41, 0.67]
Year Two (N = 96,551)	-0.38	[-1.37, 0.61]
Overall (N = 106,616)	-0.38	[-1.27, 0.51]
PQI admissions—acute <sup>3</sup>		
Year One (N = 63,391)	-0.26	[-0.85, 0.33]
Year Two (N = 96,551)	-0.18	[-0.65, 0.28]
Overall (N = 106,616)	-0.21	[-0.66, 0.24]
PQI admissions—chronic <sup>4</sup>		
Year One (N = 63,391)	-0.06	[-0.76, 0.64]
Year Two (N = 96,551)	-0.07	[-0.81, 0.66]
Overall (N = 106,616)	-0.07	[-0.70, 0.56]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique HCH participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, there were no statistically significant *overall* estimates indicating that the HCH initiative is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.

### 7.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes

The metrics for the quantitative analyses discussed above relied on Medicare administrative claims data. For most of the quality indicators, there were not statistically significant findings when comparing HCH initiative practices to the comparison group. We did observe a statistically significant increase in the likelihood of HCH initiative beneficiaries with diabetes getting medical attention for nephropathy compared to those in non-PCMH comparison group practices, driven largely by the changes in Year One, so the finding remains uncertain. A positive outcome for this quality indicator would have been consistent with findings from our interviews with providers and other stakeholders that there was a greater emphasis on preventive care, particularly among beneficiaries with chronic conditions like diabetes.

We did not find statistically significant evidence of changes in the rates of potentially avoidable catastrophic events or PQI admissions among MAPCP Demonstration beneficiaries. During our Year Two site visit, providers and other stakeholders cautioned that it could take longer than 2 years to see improvement associated with HCH initiatives in quality of care outcomes, such as preventable hospitalizations.

## 7.4 Access to Care and Coordination of Care

### 7.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two

During the second year of the demonstration, all practices made efforts to improve access to care and care coordination. Both access to care and care coordination were central to the state's HCH certification and recertification standards. Most notable in terms of access to care was the requirement that practices offer real-time access to a practice staff member on a 24/7 basis. The practice staff member on-call also had to have access to the patient's medical record and care plan.

All the practices we spoke with had fulfilled the 24/7 access requirement successfully, and most had implemented a call center staffed by clinicians and triage nurses on a rotating basis. One practice also satisfied this requirement by using a new secure online-messaging system that allowed patients' caregivers to communicate directly with clinic staff. Several practices reported that although they had already implemented 24/7 access in a prior year, patients were largely unaware of the service. During the past year, these practices had launched educational campaigns to inform patients of this option. Additionally, several practices described efforts to increase access to same-day appointments, noting improvements in this area.

Care coordination was another key component of HCH certification, since practices needed a designated care coordinator on staff to obtain HCH certification. It was also a major focus of technical assistance provided by the state. The state released a toolkit for care coordinators in August 2013, and practices refined their use of care coordinators over the past

year. There seemed to be an increased focus on care plan development. For some practices, the implementation of care plans was a new process, and others focused on expanding care plans to a greater share of the practice's patients. One practice modified and improved the structure of the care plan—with a new emphasis on making the document editable, as opposed to static.

All practices expressed confidence that access to care for their patients was very good and had improved over the last few years. Additionally, several practices reported that care coordinators were effective in preventing unnecessary clinic visits, thereby freeing up appointment slots and increasing access for patients needing an in-person visit. Several practices told us that patients typically were able to get same-day appointments now—and that this was an improvement over past years. Virtually all practices were emphatic about the positive changes associated with care coordinators. Practices reported that care coordinators were effective in connecting patients with specialty care, following up after appointments outside the clinic, making reminder calls and generally being available when patients had questions or concerns.

#### **7.4.2 Changes in Access to Care and Coordination of Care**

Our evaluation of the HCH initiative and access to and coordination of care addresses whether the HCH initiative was associated with changes in the utilization of primary care services and specialist services, and with better or enhanced coordination of care for Medicare beneficiaries. **Table 7-7** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across HCH initiative practices and one comparison group: non-PCMHs. The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 7.4.3**.

The first four measures address utilization of primary care and specialist services. Demonstration beneficiaries are expected to increase their utilization of primary care services and decrease utilization of specialist services relative to comparison group beneficiaries after the start of the MAPCP Demonstration. We look at the quarterly rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall visit rate, for example, if the HCH initiative is associated with reduction in both primary care and specialist visit rates, we also analyze the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. Having a higher percentage indicates greater use of primary care services relative to specialist services. Demonstration beneficiaries are expected to have higher primary care visit percentages.

We analyze two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. The HCH initiative is expected to increase the follow-up visit rate and reduce the unplanned readmission rate.

Finally, we assessed continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is

assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plan. The value of the continuity of care index, which is measured annually, ranges from 0 to 1. Demonstration beneficiaries are expected to have higher values on the continuity of care index.

With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes are modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile.

**Table 7-7**  
**Minnesota: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)		
Year One (N = 63,391)	62.64	[-5.52, 130.80]
Year Two (N = 96,551)	-22.23	[-106.12, 61.66]
Overall (N = 106,616)	10.59	[-64.27, 85.45]
Medical specialist visits (per 1,000 beneficiary quarters)		
Year One (N = 63,391)	-9.12	[-27.51, 9.27]
Year Two (N = 96,551)	0.00	[-29.41, 29.42]
Overall (N = 106,616)	-3.52	[-27.23, 20.19]
Surgical specialist visits (per 1,000 beneficiary quarters)		
Year One (N = 63,391)	-2.89	[-11.40, 5.61]
Year Two (N = 96,551)	-5.59	[-15.91, 4.73]
Overall (N = 106,616)	-4.55	[-13.67, 4.57]
Primary care visits as percent of total visits (higher quintile = larger percentage)		
Year One (N = 65,649)		
1st quintile	-2.31*	[-4.05, -0.58]
5th quintile	1.68*	[0.47, 2.89]
Year Two (N = 31,993)		
1st quintile	-1.43	[-3.13, 0.26]
5th quintile	0.97	[-0.17, 2.11]
Overall (N = 70,348)		
1st quintile	-2.03*	[-3.61, -0.46]
5th quintile	1.45*	[0.36, 2.55]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)		
Year One (N = 6,981)	3.93	[-28.62, 36.49]
Year Two (N = 10,433)	-12.89	[-46.72, 20.93]
Overall (N = 15,588)	-6.17	[-36.57, 24.24]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 8,905)	-22.71*	[-40.15, -5.28]
Year Two (N = 13,546)	-22.71*	[-42.53, -2.88]
Overall (N = 19,811)	-22.71*	[-38.65, -6.77]

(continued)

**Table 7-7 (continued)**  
**Minnesota: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Continuity of care index (higher quintile = better continuity of care)		
Year One (N = 78,853)		
1st quintile	-0.10	[-1.58, 1.38]
5th quintile	0.11	[-1.40, 1.62]
Year Two (N = 39,351)		
1st quintile	-1.64	[-3.71, 0.43]
5th quintile	1.55	[-0.36, 3.46]
Overall (N = 83,061)		
1st quintile	-0.59	[-2.14, 0.96]
5th quintile	0.57	[-0.95, 2.08]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique HCH participants eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the HCH initiative is associated with an increase in primary care visits as a share of total visits. Specifically, the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's **primary care visits as percent of total visits** was in the lower quintile and increase in the likelihood that it was in the upper quintile. The upper quintile represents beneficiaries who had the highest percentage of visits in the primary care setting. The

lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the HCH initiative is associated with an increase in the rate of **unplanned 30-day readmissions** among MAPCP Demonstration beneficiaries by 22.71 per 1,000 beneficiary quarters.

#### **7.4.3 Discussion of Access to Care and Coordination of Care**

Overall, there is little evidence that HCH initiative practices were different from non-PCMH practices in the comparison group in terms of primary care visits, medical specialist visits, and surgical specialist visits per 1,000 beneficiary quarters. HCH initiative practices do show an increase in the primary care visit rate as a percentage of total visits, compared to non-PCMH practices overall, which could in part be because of the focus on increasing access to primary care in the HCH initiative.

Practices' efforts to coordinate care transitions more effectively for their patients possibly were associated with some payoff in the reduced 30-day unplanned readmissions for HCH initiative practices compared non-PCMH practices. The mechanism through which this occurs, however, does not appear to be through an increased rate of follow-up visits within 14 days of a hospital discharge. It is possible that care coordinators followed up with recently discharged patients through phone calls or e-mails, as opposed to visits, and that this allowed practices to give patients enough guidance to prevent unplanned readmissions.

### **7.5 Beneficiary Experience with Care**

#### **7.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

HCH standards required that certified practices engage in activities to improve patients' experience of care, including encouraging patient self-management of their conditions and shared decision making. This topic was a focus of a May 2013 HCH learning collaborative sponsored by the state.

Several practices described an increased focus on care plan development and the use of care plans as a starting point for patient self-management. In most care plans, patients worked with providers to identify goals, and clinic staff (usually care coordinators) helped them achieve these goals. Practices asserted that the presence of care coordinators improved patient engagement, since care coordinators were involved with the development of care plans and periodic outreach to patients.

Some practices offered patient education around the HCH model, although they did not necessarily call it by that name. Since patients were required to opt-in to the HCH program, some practices used this as a time to discuss the benefits of the HCH with patients, including 24/7 access and care coordination services.

Most practices reported that the majority of their patients were happy with the changes made under the HCH initiative, with the caveat that patients were unlikely to be able to name the

initiative or the specific changes made under the program. Practices hypothesized that—since they treated all patients the same, whether or not the patient opted-in to receive HCH services—patients found it difficult to identify specific changes made under the HCH initiative. Practices were confident, however, that patients appreciated the features of the HCH visible to them, including a sense that the clinic cared about them as an individual, beyond their physical conditions.

A staff member at one practice was confident that the focus on self-management benefitted patients outside the clinic, explaining: “It’s my intuition that [patients] are going through our chronic disease management and self-management programs, and [it is] having an impact on how people are functioning in the community and improving their level of independence.” Additionally, practices reported that patients especially appreciated having a single person (usually a care coordinator) to call with any concerns or questions.

### **7.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between the HCH initiative and changes in beneficiary experience with care are not yet available. In the final report, we plan to report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

## **7.6 Effectiveness (Utilization & Expenditures)**

### **7.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures During Year Two**

Minnesota expected that, out of pre-demonstration average Medicare spending (for Parts A and B) of \$575 per beneficiary per month (PBPM) in Minnesota, participation in the MAPCP Demonstration would produce average savings of \$27 PBPM. Although spending on outpatient primary care and specialty services was expected to go up slightly (by \$4 PBPM), spending on inpatient acute-care hospital services was expected to decrease substantially (\$29 PBPM), and additional, smaller decreases were expected in spending on ER visits (\$1 PBPM) and skilled nursing facility services (\$1 PBPM). The state declined to estimate the impact on other categories of spending that lacked an adequate evidence base—specifically imaging, laboratory tests, therapy services, ambulance/transportation services, home health services, durable medical equipment, and hospice care. Net of HCH payments, Minnesota estimated that Medicare would save \$15.20 PBPM.

Practices participating in the HCH initiative implemented several processes that could potentially result in cost savings—perhaps most notably, care coordination, efforts to reduce ER utilization, and the prevention of unnecessary hospitalizations. Practices and payers noted that several other payment and delivery systems reforms, including the mass movement toward ACO-style “total cost of care” contracts, would make it difficult to parse out cost efficiencies achieved directly as a result of the HCH initiative. One payer asserted that certain practices had already maximized efficiencies, making it very difficult to achieve additional cost savings.

Some practice staff indicated that the care coordinators had succeeded in reducing unnecessary ER visits, because patients knew that they could speak to a clinic staff person at any time of day. Many clinics shared anecdotes about patients who visited the ER several times per month before the HCH, but now effectively managed their condition at the clinic or at home, as a

result of care coordination and other clinic activities. Practice staff also emphasized that better preventive care or clinic-based care was linked to reductions in ER visits, and that new clinic processes allowed more effective delivery of preventive care.

Some clinics were unable to produce the type of cost and utilization data they believed were necessary for systematic identification of opportunities for improvement. One clinic expressed frustration that the utilization reports they received from health plans and hospitals were not in real time, but staff from this clinic speculated that utilization had decreased recently.

## 7.6.2 Changes in Utilization and Expenditures

**Tables 7-8** and **7-9** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between the HCH initiative and the non-PCMH comparison group. **Tables 7-8** contains measures of total expenditures as well as specific categories of expenditures expected to be affected by the implementation of the HCH initiative. Estimates in this table are interpreted as the difference in the rate of growth in per beneficiary per month (PBPM) expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

The HCH initiative is expected to reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether the HCH initiative is associated with the intended utilization changes in these care categories, we observe changes in acute-care, post-acute-care, and ER utilization. We also analyze changes in all-cause admissions and ER visits not leading to hospitalization measured as rates per 1,000 beneficiary quarters. **Table 7-9** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits not leading to hospitalization per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.

The HCH initiative is also expected to result in higher utilization of certain types of services. In particular, we expect that the demonstration will increase the utilization of primary care, specialty services, and outpatient services (including care received at hospital outpatient departments, FQHCs, and RHCs). These services are captured in our measures of primary care physician expenditures, specialty physician expenditures, and outpatient expenditures. Positive regression coefficients indicate that the HCH initiative is associated with the expected increase in use of these services.

As described above, the HCH initiative is expected to decrease the use of some services while increasing the use of others. Overall, the MAPCP Demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyze the average overall Medicare PBPM expenditures and looked for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 7.6.4**.

**Table 7-8**  
**Minnesota: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Total Medicare		
Year One (N = 63,391)	7.15	[-34.64, 48.94]
Year Two (N = 96,551)	20.37	[-14.24, 54.97]
Overall (N = 106,616)	15.25	[-18.41, 48.92]
Acute-care		
Year One (N = 63,391)	9.85	[-8.03, 27.73]
Year Two (N = 96,551)	10.14	[-9.84, 30.12]
Overall (N = 106,616)	10.03	[-6.56, 26.62]
Post-acute-care		
Year One (N = 63,391)	-0.66	[-13.65, 12.32]
Year Two (N = 96,551)	7.85	[-2.67, 18.37]
Overall (N = 106,616)	4.56	[-6.02, 15.13]
ER visits not leading to hospitalization		
Year One (N = 63,391)	2.30*	[0.84, 3.75]
Year Two (N = 96,551)	1.77	[-0.11, 3.65]
Overall (N = 106,616)	1.97*	[0.40, 3.55]
Outpatient		
Year One (N = 63,391)	6.58	[-2.30, 15.46]
Year Two (N = 96,551)	13.59*	[2.99, 24.19]
Overall (N = 106,616)	10.88*	[1.57, 20.19]
Specialty physician		
Year One (N = 63,391)	-13.21*	[-19.08, -7.34]
Year Two (N = 96,551)	-13.69*	[-18.51, -8.87]
Overall (N = 106,616)	-13.51*	[-18.29, -8.72]
Primary care physician		
Year One (N = 63,391)	1.03	[-2.15, 4.21]
Year Two (N = 96,551)	-2.94	[-6.15, 0.28]
Overall (N = 106,616)	-1.40	[-4.44, 1.64]
Home health		
Year One (N = 63,391)	1.72	[-1.61, 5.05]
Year Two (N = 96,551)	2.38	[-1.04, 5.79]
Overall (N = 106,616)	2.12	[-1.10, 5.34]
Other non-facility		
Year One (N = 63,391)	0.10	[-1.27, 1.46]
Year Two (N = 96,551)	0.21	[-1.28, 1.71]
Overall (N = 106,616)	0.17	[-1.12, 1.46]
Laboratory		
Year One (N = 63,391)	1.10	[-0.14, 2.34]
Year Two (N = 96,551)	-0.21	[-1.30, 0.87]
Overall (N = 106,616)	0.29	[-0.75, 1.34]

(continued)

**Table 7-8 (continued)**  
**Minnesota: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Imaging		
Year One (N = 63,391)	-0.62	[-1.58, 0.33]
Year Two (N = 96,551)	-0.55	[-1.50, 0.40]
Overall (N = 106,616)	-0.58	[-1.45, 0.30]
Other facility		
Year One (N = 63,391)	0.25	[-0.49, 1.00]
Year Two (N = 96,551)	-0.12	[-0.81, 0.57]
Overall (N = 106,616)	0.02	[-0.63, 0.68]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique HCH participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There is no statistically significant difference in the *overall* growth of **total Medicare expenditures** among beneficiaries in HCH practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **expenditures for ER visits not leading to hospitalization** is \$1.97 faster among beneficiaries in HCH initiative practices relative to beneficiaries in non-PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- The *overall* growth in **outpatient (including FQHCs) expenditures** is \$10.88 faster among beneficiaries in HCH initiative practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **expenditures for specialty physicians** is \$13.51 slower among beneficiaries in HCH initiative practices relative to beneficiaries in non-PCMH practices.

**Table 7-9**  
**Minnesota: Comparison of average change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
All-cause admissions		
Year One (N = 63,391)	0.67	[-2.67, 4.01]
Year Two (N = 96,551)	-0.57	[-3.64, 2.50]
Overall (N = 106,616)	-0.09	[-2.95, 2.78]
ER visits not leading to hospitalization		
Year One (N = 63,391)	5.80*	[0.41, 11.19]
Year Two (N = 96,551)	4.67	[-1.31, 10.65]
Overall (N = 106,616)	5.11	[-0.04, 10.26]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique HCH participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; HCH = Health Care Homes; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the HCH initiative is associated with changes in the rates of **all-cause admissions** or **ER visits not leading to hospitalizations** among MAPCP Demonstration beneficiaries.

### 7.6.3 Medicare Budget Neutrality in Year Two of the HCH Initiative

#### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention, absent any fees paid on behalf of Medicare. Estimates of gross savings for Minnesota through Year Two of the demonstration are based on the sum of eight quarter-specific cost regression coefficients comparing beneficiaries attributed to MAPCP Demonstration practices to beneficiaries attributed to non-PCMH comparison practices. Negative cost estimates denote savings, as the growth in MAPCP Demonstration costs are smaller than in the comparison group. Positive cost estimates denote losses, as the growth in MAPCP Demonstration costs exceed that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares with the beneficiary-quarter as the unit of analysis.

## MAPCP Demonstration Fees

In the MAPCP Demonstration, CMS paid monthly medical home fees to HCH initiative practices for eligible Medicare beneficiaries. Fees are those actually paid out, and there is no imputation for practices that chose not to bill for care management under the demonstration. Total monthly fees paid by Medicare are aggregated to the quarter level from claims submitted on behalf of the practices and other participating organizations. Budget neutrality, or net savings, is determined on a yearly (or multiple-year) basis by subtracting all paid fees during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality are slightly lower than the actual fees paid. This is because the savings regression model excludes beneficiaries who were eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees are also calculated excluding beneficiaries with less than three months of demonstration eligibility.

## Statistical Tests of Budget Neutrality

This regression methodology allows for statistical tests of confidence that CMS and the states could place in any estimated savings. Three tests are conducted.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration associated with a lower level of costs in one or more demonstration quarters during the first 2 years?*
2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower MAPCP Demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings has to be positive, implying systematically lower MAPCP Demonstration expenditures relative to the non-PCMH comparison group and controlling for beneficiary and practice characteristics.
3. The third test requires that total gross savings exceed total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid out?*

## Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures

In addition to statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration into perspective. The first measure is the return on investment (RoI) of fees, the ratio of total gross savings to total fees paid by the MAPCP Demonstration. RoI answers the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implies budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among demonstration beneficiaries in the absence of the demonstration. This unobservable outcome is estimated by taking average Medicare expenditures observed in the comparison group and multiplying them by the number of

demonstration beneficiaries. Viewing total gross savings in context of this number answers the question: What are Medicare's savings as a percentage of all expenditures? The validity of the interpretation of both of these ratios, however, relies on the statistical significance of the estimate of total gross savings.

*Tables 7-10a–c* report the estimated gross and net savings for Minnesota during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 7-10a**  
**Minnesota: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	\$37.35	–\$11.99	–\$0.71	\$53.87	\$21.45
Eligible beneficiary quarters (B)	27,634	35,552	46,902	55,159	165,248
Total gross savings (C = -A*B)	–\$1,032,094	\$426,159	\$33,346	–\$2,971,413	–\$3,544,002
Total MAPCP Demonstration fees (D)	\$65,111	\$94,470	\$122,623	\$157,350	\$439,554
Net savings (E = C-D)	–\$1,097,205	\$331,689	–\$89,277	–\$3,128,763	–\$3,983,556
Average expenditures (PCMH CG) (F)	\$2,466	\$2,813	\$2,557	\$2,601	\$2,612
Total expenditures (PCMH CG) (G = F*B)	\$68,145,444	\$100,007,776	\$119,928,414	\$143,468,559	\$431,550,193
Average expenditures (MAPCP Demonstration) (H)	\$2,281	\$2,430	\$2,313	\$2,480	\$2,389
Total expenditures (MAPCP Demonstration) (I = H*B)	\$63,033,154	\$86,391,360	\$108,484,326	\$136,794,320	\$394,703,160

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 7-10b**  
**Minnesota: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	2013: Q3 (Jul–Sept)	2013: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	–\$22.40	–\$23.04	\$50.97	\$186.82*	\$61.10
Eligible beneficiary quarters (B)	57,839	58,222	63,471	82,492	262,024
Total gross savings (C = -A*B)	\$1,295,694	\$1,341,326	–\$3,235,284	–\$15,411,328	–\$16,009,593
Total MAPCP Demonstration fees (D)	\$172,741	\$206,490	\$205,733	\$233,792	\$818,755
Net savings (E = C-D)	\$1,122,953	\$1,134,836	–\$3,441,017	–\$15,645,120	–\$16,828,348
Average expenditures (PCMH CG) (F)	\$2,617	\$2,542	\$2,518	\$2,374	\$2,500
Total expenditures (PCMH CG) (G = F*B)	\$151,364,663	\$148,000,324	\$159,819,978	\$195,836,008	\$655,020,973
Average expenditures (MAPCP Demonstration) (H)	\$2,458	\$2,525	\$2,439	\$2,428	\$2,459
Total expenditures (MAPCP Demonstration) (I = H*B)	\$142,168,262	\$147,010,550	\$154,805,769	\$200,290,576	\$644,275,157

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees, excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 7-10c**  
**Minnesota: Estimates of gross savings, fees paid, and net savings, all years**

	Year One and Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	\$45.76	-\$55.24	\$146.76
Eligible beneficiary quarters (B)	427,272	—	—
Eligible beneficiaries overall	106,616	—	—
Total gross savings (C = -A*B)	-\$19,553,595	-\$62,708,092	\$23,600,903
Total MAPCP Demonstration fees (D)	1,258,309	—	—
Net savings (E = C-D)	-\$20,811,903	-\$63,966,401	\$22,342,594
Average expenditures (PCMH CG) (F)	\$2,543	—	—
Total expenditures (PCMH CG) (G = F*B)	\$1,086,571,166	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,432	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$1,038,978,317	—	—
Return on fees (J = C/D)	-15.54	—	—
Gross savings per comparison expenditures (K = C/G)	-0.018	—	—

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A\*B): Weighted average of the quarterly difference in expenditures per beneficiary attributable to the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration would equate to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (comp) (F\*B): Average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(J) Return on fees (J = C/D): Total gross savings divided by total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2012:Q1—2013:Q4.

- Estimated differences in HCH initiative costs per beneficiary, relative to the comparison group, ranged from a positive \$186.82 (2013: Quarter 4) to a negative \$23.04 (2013: Quarter 2) [**Tables 7-10a–b**]. While some estimates were negative, none were statistically significant. Unfortunately, the estimate in the most recent quarter (2013: Quarter 4) was both positive and statistically significant.
- Estimated total gross savings to Medicare was a negative \$19,553,595 [**Table 7-10c: C**], but the implied loss was not statistically significant. The confidence interval (2-sided; 90 percent level) ranged between \$62.7 million in losses to \$23.6 million in savings. Net savings were estimated at negative \$20,811,903, but are similarly not statistically significant.
- The \$19.6 million loss estimate represents less than 2 percent of the estimated \$1.1 billion in comparison group costs weighted by HCH eligible beneficiaries [**Table 7-10c: K**]. The width of the confidence interval for total gross savings, however, indicates that the loss to date cannot be considered statistically different from zero.
- Total fees paid out based on HCH eligible quarters were \$1,258,309 [**Table 7-10c: D**], or about \$1 per eligible quarter.<sup>1</sup> The fees averaged less than 1 percent of total Medicare expenditures for health services by HCH eligible beneficiaries during the demonstration's first 2 years [**Table 7-10c: I**].
- This translates into a Medicare RoI of fees of -15.54. ( $-\$19,553,595 / \$1,258,309$ ) [**Table 7-10c: J**], though the confidence interval around the total gross savings estimate does not indicate statistical significance.

#### 7.6.4 Discussion of Effectiveness

During the site visit, the most often cited practice transformations meant to bring about changes in expenditures and health care utilization included improved access to care through 24/7 access and open scheduling, delivery of care management services to beneficiaries in need of additional support managing their health, follow-up after discharge from the hospital or ER, and significant use of medical record data to identify gaps in needed care. These transformations were intended to lower the use of high-cost utilization, such as inpatient care and ER use, and to improve use of lower-cost services, such as ambulatory and outpatient facility services, resulting in a possible net reduction in the rate of expenditure growth. There was no evidence that the HCH initiative was associated with a reduction in total Medicare expenditures.

During the site visit, many providers and care managers shared anecdotal evidence of reduced rates of ER and inpatient care use. Despite this anecdotal evidence, the data does not show reductions in ER use among HCH initiative beneficiaries. In fact, there is a statistically

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<sup>1</sup> Fees per eligible month equaled the total fees divided by MAPCP Demonstration-eligible months. Eligible months equaled eligible quarters multiplied by 3.

significant faster growth in ER expenditures among HCH initiative beneficiaries compared to the non-PCMH comparison group both in Year One and overall.

Overall, we observed slower rates of expenditure growth in specialty physician expenditures and faster rates of expenditure growth for ER visits not leading to hospitalization and outpatient services, but no statistically significant net association with total Medicare spending. These associations will be closely monitored during Year Three. Site visit interviewees agreed that altering patterns of care takes time and that any significant changes in patterns may very well not occur until several years into practice transformation.

Given that relatively few practices in Minnesota submitted bills to Medicare for HCH payments, a finding of significant savings in Medicare spending in HCH practices relative to non-PCMH practices could have resulted in a substantial RoI. Spending in HCH practices, however, was higher than in non-PCMH practices over the eight quarters studied here and that meant no opportunity for a positive RoI. In fact, the low billings for HCH services prevented the federal government's negative RoI over these first 2 years from being greater than it was.

## **7.7 Special Populations**

### **7.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

Minnesota's HCH payment model explicitly targeted certain patient populations through its complexity tier assignment tool, a worksheet practices used to stratify HCH patients for different HCH payment levels. As noted earlier, practices received HCH payments based on the number of chronic conditions a patient had, with multipliers if the patient had a severe and persistent mental illness or spoke English as a second language.

All practices emphasized that patients were treated equally, regardless of payment source, partly because providers were often unaware of a patient's insurance. To the extent that Medicare beneficiaries required more intensive care than younger, healthier patients, the Medicare population received some targeted attention, but this did not appear to be a result of HCH activities specifically. Similarly, many practice staff confirmed that patients with multiple chronic conditions required the most care coordination, and they were frequently targeted through registries or other means to receive this care. Additionally, some clinics described efforts to connect patients with mental illness to community-based behavioral health resources. There were no special initiatives described to focus on these populations specifically.

Even before the HCH payment model—with its incentives to treat non-native English speakers—was developed, some practices already had translation capabilities in place, since Minnesota has sizable Hmong and Somali populations. No practices we spoke to reported any difficulty securing translation services for these populations.

### **7.7.2 Changes Experienced by Special Populations**

In all states, we provide quantitative analysis of the association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries. These special populations included beneficiaries with specific conditions that could lead to

higher utilization of health care (beneficiaries with multiple chronic conditions, behavioral health conditions, or disabilities) or those who may experience disparities in access to and quality of health care (beneficiaries who are dually eligible for Medicare and Medicaid, live in rural areas, or belong to racial/ethnic minorities). **Table 7-11** reports covariate-adjusted differences in total Medicare spending PBPM across the MAPCP Demonstration and the non-PCMH comparison group for all six special populations. Estimates in **Table 7-11** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

**Tables 7-12 through 7-16** examine the changes associated with the MAPCP Demonstration for beneficiaries with multiple chronic conditions. Care management is expected to have a greater impact on outcomes for this population than for the Medicare population in general, and, for this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population in all states.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in two consecutive years of Medicare claims. To identify chronic conditions, we used the Chronic Condition Indicator algorithm, developed by AHRQ as part of the Healthcare Cost and Utilization Project (discussed in more detail in Appendix D). The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one lasting 12 months or longer and meeting one or both of the following conditions: (a) limiting a person's ability to care for themselves, live independently, or interact with others; (b) requiring ongoing intervention with medical products, services, and/or special equipment. In addition, beneficiaries also must be in the CMS-HCC high-risk category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 26 percent of beneficiaries fit this profile in Minnesota.

Medicare beneficiaries with behavioral health conditions are another population with greater health needs who could benefit more from care management, relative to the Medicare population in general. This population also has expenditures and utilization directly identifiable as due to behavioral health conditions. In all states, we report the changes associated with the MAPCP Demonstration on a selection of overall and behavioral health-specific expenditure and utilization outcomes; the results for Minnesota are in **Table 7-17** and **Table 7-18**.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 7.7.3**.

**Table 7-11**  
**Minnesota: Comparison of average change estimates for total PBPM Medicare**  
**expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Multiple chronic conditions only		
Year One (N = 15,945)	77.55	[-41.80, 196.90]
Year Two (N = 24,467)	67.56	[-41.47, 176.59]
Overall (N = 27,253)	71.44	[-29.94, 172.83]
Behavioral health conditions only		
Year One (N = 13,463)	9.02	[-74.47, 92.51]
Year Two (N = 20,822)	52.40	[-19.56, 124.36]
Overall (N = 22,934)	35.68	[-33.93, 105.29]
Disabled beneficiaries only		
Year One (N = 20,351)	30.26	[-36.14, 96.66]
Year Two (N = 32,899)	31.47	[-38.86, 101.79]
Overall (N = 35,697)	31.02	[-31.76, 93.80]
Dually eligible beneficiaries only		
Year One (N = 14,973)	34.89	[-52.60, 122.39]
Year Two (N = 23,892)	1.73	[-81.22, 84.67]
Overall (N = 25,857)	14.00	[-64.65, 92.65]
Rural beneficiaries only		
Year One (N = 6,480)	85.48*	[4.13, 166.84]
Year Two (N = 8,977)	-65.98	[-172.28, 40.32]
Overall (N = 10,002)	-9.76	[-88.29, 68.76]
Non-White beneficiaries only		
Year One (N = 6,804)	-0.17	[-118.90, 118.56]
Year Two (N = 10,629)	-18.23	[-146.55, 110.10]
Overall (N = 11,545)	-11.64	[-127.15, 103.87]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique HCH participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There is no evidence of a statistically significant difference in the change in overall average growth in **total Medicare expenditures** PBPM for beneficiaries in the HCH initiative relative to beneficiaries in the non-PCMH practices for any of the special populations evaluated.

Although there were no significant associations between the HCH initiative and total Medicare expenditures among beneficiaries with multiple chronic conditions in HCH practices relative to beneficiaries in non-PCMH comparison practices, we expect care management to have a greater impact on outcomes for this population. In the next subsection, we further explore the association of the HCH initiative with outcomes for Medicare beneficiaries with multiple chronic conditions.

### **Beneficiaries with Multiple Chronic Conditions**

Care management could potentially have greater effects on populations with multiple chronic conditions than on the general population. In the next five tables, we consider the association between the HCH initiative and the subpopulation of beneficiaries with multiple chronic conditions, looking at quality of care, access to care, and expenditures among this population. The HCH initiative group and the non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions. Estimates in **Table 7-12** are interpreted as the percentage point difference associated with the HCH initiative in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. HCH initiative beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the “none” indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 7-13**. Estimates in **Table 7-13** are interpreted as the difference in the rate of events associated with the demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the HCH Demonstration is associated with improved access to ambulatory care, we expect demonstration beneficiaries with multiple chronic conditions to have reduced rates (i.e., a significant negative value) of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 7.3.2**.

**Table 7-12**  
**Minnesota: Comparison of average change estimates for process of care indicators among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
HbA1c testing		
Year One (N = 3,790)	1.20	[-1.16, 3.55]
Year Two (N = 1,194)	1.41	[-1.91, 4.73]
Overall (N = 3,842)	1.25	[-1.05, 3.54]
Retinal eye examination		
Year One (N = 3,790)	3.87	[-1.00, 8.74]
Year Two (N = 1,194)	-1.30	[-5.94, 3.33]
Overall (N = 3,842)	2.65	[-1.58, 6.89]
LDL-C screening		
Year One (N = 3,790)	0.72	[-1.82, 3.25]
Year Two (N = 1,194)	7.04*	[2.18, 11.89]
Overall (N = 3,842)	2.20	[-0.11, 4.52]
Medical attention for nephropathy		
Year One (N = 3,790)	5.13*	[1.26, 9.00]
Year Two (N = 1,194)	7.05*	[2.45, 11.66]
Overall (N = 3,842)	5.58*	[1.95, 9.22]
Received all 4 diabetes tests		
Year One (N = 3,790)	7.77*	[2.67, 12.86]
Year Two (N = 1,194)	4.96	[-1.55, 11.47]
Overall (N = 3,842)	7.11*	[2.13, 12.09]
Received none of the 4 diabetes tests		
Year One (N = 3,790)	-0.12	[-0.88, 0.63]
Year Two (N = 1,194)	-1.40*	[-2.31, -0.48]
Overall (N = 3,842)	-0.42	[-1.08, 0.24]
Total lipid panel		
Year One (N = 7,060)	0.08	[-3.00, 3.16]
Year Two (N = 1,964)	1.71	[-1.67, 5.10]
Overall (N = 7,383)	0.43	[-2.20, 3.05]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique HCH participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; HCH = Health Care Homes; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a positive trend towards receiving a **low-density lipoprotein cholesterol (LDL-C) screening** among HCH initiative beneficiaries, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the HCH initiative is associated with an increase in the likelihood that demonstration beneficiaries received **medical attention for nephropathy** by 5.58 percentage points.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the HCH initiative is associated with an increase in the likelihood that demonstration beneficiaries received **all four diabetes** tests by 7.11 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a negative trend in the likelihood of receiving **none of the four diabetes tests** among HCH initiative beneficiaries, though at this time the *overall* estimate is not statistically significant.

**Table 7-13**  
**Minnesota: Comparison of average change estimates for health outcomes among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>		
Year One (N = 15,945)	1.27	[-1.48, 4.03]
Year Two (N = 24,467)	0.65	[-2.37, 3.66]
Overall (N = 27,253)	0.89	[-1.82, 3.60]
PQI admissions—overall <sup>2</sup>		
Year One (N = 15,945)	0.90	[-2.71, 4.51]
Year Two (N = 24,467)	1.55	[-2.22, 5.32]
Overall (N = 27,253)	1.30	[-2.09, 4.69]
PQI admissions—acute <sup>3</sup>		
Year One (N = 15,945)	0.27	[-1.55, 2.09]
Year Two (N = 24,467)	1.18	[-0.32, 2.67]
Overall (N = 27,253)	0.82	[-0.56, 2.21]

(continued)

**Table 7-13 (continued)**  
**Minnesota: Comparison of average change estimates for health outcomes among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
PQI admissions—chronic <sup>4</sup>		
Year One (N = 15,945)	0.68	[-1.93, 3.28]
Year Two (N = 24,467)	0.64	[-2.29, 3.56]
Overall (N = 27,253)	0.65	[-1.87, 3.17]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique HCH participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the HCH initiative is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.

**Table 7-14** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the HCH initiative and the non-PCMH comparison group for the population with multiple chronic conditions. With the exception of primary care visits as a percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the HCH initiative in either Year One, Year Two, or both

years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. HCH initiative beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes are modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the HCH initiative in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 7.4.2**.

**Table 7-14**  
**Minnesota: Comparison of average change estimates for access to care and coordination of**  
**care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)		
Year One (N = 15,945)	162.35*	[26.01, 298.70]
Year Two (N = 24,467)	11.73	[-153.91, 177.37]
Overall (N = 27,253)	70.26	[-79.05, 219.58]
Medical specialist visits (per 1,000 beneficiary quarters)		
Year One (N = 15,945)	40.46	[-4.23, 85.15]
Year Two (N = 24,467)	31.61	[-33.85, 97.08]
Overall (N = 27,253)	35.05	[-18.62, 88.73]
Surgical specialist visits (per 1,000 beneficiary quarters)		
Year One (N = 15,945)	14.86	[-0.40, 30.12]
Year Two (N = 24,467)	4.82	[-12.86, 22.51]
Overall (N = 27,253)	8.73	[-6.94, 24.39]

(continued)

**Table 7-14 (continued)**  
**Minnesota: Comparison of average change estimates for access to care and coordination of**  
**care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Primary care visits as percentage of total visits (higher quintile = larger percentage)		
Year One (N = 21,320)		
1st quintile	-3.70*	[-6.01, -1.39]
5th quintile	2.01*	[0.80, 3.21]
Year Two (N = 9,534)		
1st quintile	-1.05	[-3.25, 1.15]
5th quintile	0.57	[-0.62, 1.77]
Overall (N = 21,920)		
1st quintile	-2.91*	[-5.02, -0.81]
5th quintile	1.58*	[0.47, 2.69]
ER visits not leading to hospitalization (per 1,000 beneficiary quarters)		
Year One (N = 15,945)	17.27*	[3.67, 30.88]
Year Two (N = 24,467)	2.54	[-11.38, 16.46]
Overall (N = 27,253)	8.27	[-3.91, 20.44]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)		
Year One (N = 3,363)	34.68	[-10.17, 79.54]
Year Two (N = 4,966)	4.28	[-47.78, 56.34]
Overall (N = 7,187)	16.53	[-27.35, 60.41]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 4,304)	-28.17	[-57.90, 1.57]
Year Two (N = 6,482)	-29.86	[-68.64, 8.93]
Overall (N = 9,163)	-29.18	[-60.86, 2.50]

(continued)

**Table 7-14 (continued)**  
**Minnesota: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Continuity of care (higher quintile = better continuity of care)		
Year One (N = 24,356)		
1st quintile	0.43	[-1.48, 2.35]
5th quintile	-0.48	[-2.63, 1.68]
Year Two (N = 11,290)		
1st quintile	0.16	[-2.65, 2.97]
5th quintile	-0.16	[-3.12, 2.79]
Overall (N = 24,769)		
1st quintile	0.35	[-1.70, 2.40]
5th quintile	-0.38	[-2.63, 1.86]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique HCH participants with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile*.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the HCH initiative is associated with an increase in primary care visits as a share of total visits. Specifically, the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's **primary care visits as percent of total visits** was in the lower quintile and increase in the likelihood that it was in the upper quintile. The upper quintile represents beneficiaries with multiple chronic conditions who had the highest percentage of visits in the primary care setting. The lack of statistical

significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

**Tables 7-15** and **7-16** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to HCH Demonstration practices and the comparison group of beneficiaries with multiple chronic conditions attributed to non-PCMH practices. Estimates in **Table 7-15** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

The HCH initiative also is expected to result in lower utilization of services such as all-cause admissions and ER care. **Table 7-16** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits not leading to hospitalization per 1,000 beneficiary quarters associated with the HCH initiative in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 7.6.2**.

**Table 7-15**  
**Minnesota: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Total Medicare		
Year One (N = 15,945)	77.55	[-41.80, 196.90]
Year Two (N = 24,467)	67.56	[-41.47, 176.59]
Overall (N = 27,253)	71.44	[-29.94, 172.83]
Acute-care		
Year One (N = 15,945)	58.02*	[2.61, 113.43]
Year Two (N = 24,467)	33.82	[-33.56, 101.19]
Overall (N = 27,253)	43.22	[-11.25, 97.69]
Post-acute-care		
Year One (N = 15,945)	11.35	[-33.67, 56.37]
Year Two (N = 24,467)	26.10	[-9.98, 62.17]
Overall (N = 27,253)	20.36	[-16.81, 57.54]
ER		
Year One (N = 15,945)	6.19*	[2.49, 9.88]
Year Two (N = 24,467)	1.85	[-2.47, 6.18]
Overall (N = 27,253)	3.54	[-0.06, 7.14]
Outpatient		
Year One (N = 15,945)	9.32	[-14.78, 33.43]
Year Two (N = 24,467)	22.00	[-2.95, 46.96]
Overall (N = 27,253)	17.07	[-6.60, 40.75]

(continued)

**Table 7-15 (continued)**  
**Minnesota: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Specialty physician		
Year One (N = 15,945)	-24.91*	[-41.37, -8.45]
Year Two (N = 24,467)	-22.43*	[-35.13, -9.73]
Overall (N = 27,253)	-23.39*	[-36.41, -10.38]
Primary care physician		
Year One (N = 15,945)	4.22	[-2.80, 11.24]
Year Two (N = 24,467)	-4.02	[-11.22, 3.18]
Overall (N = 27,253)	-0.82	[-7.22, 5.59]
Home health		
Year One (N = 15,945)	9.81	[-0.36, 19.98]
Year Two (N = 24,467)	9.78*	[0.54, 19.01]
Overall (N = 27,253)	9.79*	[0.83, 18.75]
Other non-facility		
Year One (N = 15,945)	-0.12	[-2.79, 2.54]
Year Two (N = 24,467)	0.67	[-2.63, 3.96]
Overall (N = 27,253)	0.36	[-2.24, 2.96]
Laboratory		
Year One (N = 15,945)	2.64*	[0.79, 4.49]
Year Two (N = 24,467)	0.99	[-0.61, 2.59]
Overall (N = 27,253)	1.63*	[0.14, 3.12]
Imaging		
Year One (N = 15,945)	0.12	[-1.88, 2.12]
Year Two (N = 24,467)	-0.16	[-2.01, 1.69]
Overall (N = 27,253)	-0.05	[-1.80, 1.69]
Other facility		
Year One (N = 15,945)	1.08	[-1.99, 4.14]
Year Two (N = 24,467)	-0.35	[-3.10, 2.41]
Overall (N = 27,253)	0.21	[-2.46, 2.87]

**NOTES:**

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique HCH participants with multiple chronic conditions eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; HCH = Health Care Homes; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in expenditures for specialty physicians is slower among beneficiaries in HCH initiative practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **home health expenditures** is faster among beneficiaries in HCH initiative practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **laboratory expenditures** is faster among beneficiaries in HCH initiative practices relative to beneficiaries in non-PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

**Table 7-16**  
**Minnesota: Comparison of average change estimates for utilization among Medicare beneficiaries with multiple chronic conditions: First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
All-cause admissions		
Year One (N = 15,945)	11.39*	[0.77, 22.01]
Year Two (N = 24,467)	4.96	[-6.31, 16.24]
Overall (N = 27,253)	7.46	[-2.52, 17.44]
ER visits not leading to hospitalization		
Year One (N = 15,945)	21.61*	[3.16, 40.07]
Year Two (N = 24,467)	3.62	[-15.39, 22.64]
Overall (N = 27,253)	10.61	[-6.36, 27.59]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique HCH participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; ER = emergency room; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the HCH initiative is associated with changes in the rates of **all-cause hospital admissions** or **ER visits not leading to a hospitalization**.

Although the HCH initiative was not associated with significant effects on total Medicare expenditures among beneficiaries with behavioral conditions in HCH practices relative to beneficiaries in non-PCMH comparison practices, we expect care management to have a greater impact on outcomes for this population. In the next subsection, we further explore the association between the HCH initiative and Medicare beneficiaries with behavioral health conditions.

### Beneficiaries with Behavioral Health Conditions

**Tables 7-17** and **7-18** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, for Medicare beneficiaries with behavioral health conditions in the HCH initiative compared to a non-PCMH comparison group. Although the HCH initiative did not explicitly target individuals with mental and/or behavioral health issues, the payment mechanism provided enhanced reimbursement for each patient with severe and persistent mental illness treated by an HCH. Like other beneficiaries of HCHs, individuals with behavioral health conditions were expected to benefit from initiatives to improve access to, coordination of, and continuity of care with primary care and other providers, including behavioral health providers. The HCH initiative was expected to improve care coordination for beneficiaries, which could, in turn, result in more appropriate use of outpatient care and reduce inpatient care and ER visits.

For this analysis, beneficiaries with behavioral health conditions are defined as those with at least one inpatient claim and/or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder during the 12-month period before their participation in the demonstration. Using this criterion, 20.9 percent of the study sample is identified as having a behavioral health condition.<sup>2</sup> The expenditure outcomes of interest includes total Medicare expenditures, expenditures for acute hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments. The service utilization outcomes of interest include all-cause inpatient admissions, all-cause ER visits, outpatient visits with a principal diagnosis of a behavioral health disorder, inpatient admissions with principal diagnosis of behavioral health disorder, and ER visits with a principal diagnosis of a behavioral health disorder. All service utilization measures represent a quarterly rate of visits per 1,000 beneficiaries.

Estimates in **Table 7-17** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. Estimates in **Table 7-18** are interpreted as the difference in the rate of utilization associated with the MAPCP Demonstration. A *negative* value corresponds to a *decrease* in the rate of utilization, while a *positive* value corresponds to an *increase* in the rate of utilization.

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<sup>2</sup> At least one behavioral health condition was present in 21.5 percent of beneficiaries in the MAPCP Demonstration group and 19.4 percent of beneficiaries in the non-PCMH comparison group.

**Table 7-17**  
**Minnesota: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
Total Medicare		
Year One (N = 13,463)	9.02	[-74.47, 92.51]
Year Two (N = 20,822)	52.40	[-19.56, 124.36]
Overall (N = 22,934)	35.68	[-33.93, 105.29]
Acute-care		
Year One (N = 13,463)	21.41	[-18.51, 61.33]
Year Two (N = 20,822)	16.73	[-22.25, 55.71]
Overall (N = 22,934)	18.53	[-15.55, 52.62]
ER visits not leading to hospitalization		
Year One (N = 13,463)	3.51	[-0.78, 7.81]
Year Two (N = 20,822)	2.12	[-1.64, 5.89]
Overall (N = 22,934)	2.66	[-0.78, 6.09]
Total for services with a principal diagnosis of a behavioral health condition		
Year One (N = 13,463)	12.71*	[3.74, 21.67]
Year Two (N = 20,822)	18.95*	[11.69, 26.20]
Overall (N = 22,934)	16.54*	[9.35, 23.74]
Total for services with a secondary diagnosis of a behavioral health condition		
Year One (N = 13,463)	25.54	[-10.23, 61.31]
Year Two (N = 20,822)	18.61	[-18.53, 55.76]
Overall (N = 22,934)	21.28	[-10.56, 53.12]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique HCH participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

CG = comparison group; ER = emergency room; HCH = Health Care Home; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in expenditures for **services with a principal diagnosis of a behavioral health condition** is \$16.54 faster among beneficiaries in MAPCP Demonstration practices relative to beneficiaries in non-PCMH practices.

**Table 7-18**  
**Minnesota: Comparison of average change estimates for behavioral and non-behavioral health care utilization among beneficiaries with behavioral health conditions: First 2 years of MAPCP Demonstration**

Outcome	HCH practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval
All-cause inpatient admissions		
Year One (N = 13,463)	-2.72	[-11.22, 5.77]
Year Two (N = 20,822)	-1.48	[-9.48, 6.53]
Overall (N = 22,934)	-1.96	[-9.29, 5.38]
ER visits not leading to hospitalization		
Year One (N = 13,463)	11.39	[-7.02, 29.80]
Year Two (N = 20,822)	17.77	[-1.67, 37.21]
Overall (N = 22,934)	15.31	[-1.20, 31.82]
Behavioral health inpatient admissions		
Year One (N = 13,463)	1.48	[-1.10, 4.06]
Year Two (N = 20,822)	2.09*	[0.48, 3.71]
Overall (N = 22,934)	1.86*	[0.14, 3.58]
Behavioral health ER visits		
Year One (N = 13,463)	0.62	[-4.17, 5.41]
Year Two (N = 20,822)	3.62	[-0.87, 8.11]
Overall (N = 22,934)	2.46	[-1.59, 6.52]
Behavioral health outpatient visits <sup>1</sup>		
Year One (N = 12,622)	-20.04	[-48.83, 8.75]
Year Two (N = 19,513)	-30.83	[-69.93, 8.27]
Overall (N = 21,673)	-26.66	[-58.70, 5.38]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique HCH participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes, because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

CG = comparison group; ER = emergency room; HCH = Health Care Homes; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* estimate indicates that the MAPCP Demonstration is associated with an increase in the rate of **behavioral health inpatient admissions** by 1.86 per 1,000

beneficiary quarters among demonstration beneficiaries with behavioral health conditions, relative to a similar population of non-PCMH beneficiaries.

### **7.7.3 Discussion of Special Populations**

While Minnesota did not state explicitly that it would target specific special populations, practices gradually began focusing their HCH care coordination activities on patients with the greatest need. The general expectation was that, by helping these patients better manage their conditions and by assisting them in obtaining appropriate care, there was potential for more effective use of health services and better health outcomes, which may, in turn, result in lower rates of total expenditure growth for these patients. The quantitative results on the association between the MAPCP Demonstration and total Medicare expenditures do not suggest that spending growth was lower among these special populations (*Table 7-11*). The enhanced primary care provided by HCHs appears to have been associated with lower spending for specialty physician services for patients with multiple chronic conditions in HCH practices as compared to non-PCMH practices (*Table 7-15*). The magnitude of the slower growth for beneficiaries with multiple chronic conditions is \$23.39, as compared to the magnitude for the overall Medicare HCH population of \$13.51 (*Table 7-8*). On the other hand, there is no clear evidence of improved continuity of care for beneficiaries with multiple chronic conditions (*Table 7-14*).

Our findings for beneficiaries with behavioral health conditions suggest that spending was targeted more effectively because the growth in expenditures for services with a behavioral health condition as a primary diagnosis grew faster in HCH practices than in non-PCMH practices (*Table 7-17*). This more rapid growth in spending for individuals with behavioral health conditions may be related to the slight increase in behavioral health inpatient admissions. There are no significant differences related to other utilization measures for MAPCP Demonstration beneficiaries with behavioral health conditions (*Table 7-18*). Although the HCH payment system acknowledged that individuals with severe and persistent mental illness required extra (and frequently costlier) care, there is no evidence that the HCH initiative is associated with significant changes in utilization patterns other than for inpatient admissions. This warrants further attention in Year Three of the evaluation.

## **7.8 Discussion of Minnesota's Year Two Findings and Next Steps**

During the second year of the MAPCP Demonstration, Minnesota's HCH initiative was enthusiastically implemented by the state and well received by many practices and health care systems. As of our second site visit, more than 40 percent of Minnesota's primary care providers worked in a certified HCH practice. The most often cited practice transformations included improved access to care through 24/7 availability, care coordination for beneficiaries in need of additional support managing their health and health care, follow-up contact after discharge from a hospital or ER, and significant use of EHRs to track patients and identify gaps in care. Although many practices found the payment system sufficiently difficult that they chose to forego billing for HCH services, most practices found HCH certification useful for assessing how their practice was operating, and they used it as an opportunity to improve how patients interacted with the health care system. Practices saw enough potential benefits in the HCH model that they were willing to participate in the demonstration even without receiving extra payments from Medicare and Medicaid in some cases.

These transformations were meant to lower the use of high-cost services, such as inpatient care and ER use, and increase use of lower-cost services, such as outpatient primary care and specialty services, resulting in a possible net reduction in the rate of expenditure growth. For the most part, however, the changes were not associated with improved outcomes for Medicare FFS beneficiaries or reduced program expenditures. The evaluation of the first 2 years in which the HCH initiative participated in the MAPCP Demonstration showed few significant associations between the initiative and outcomes related to quality of care, patient health, access to care, coordination of care, and service utilization and expenditures. (Patient experience was not included in Year Two outcomes analyses.)

Where we observed improvements, they tended to be for outcomes such as processes of care that are under the direct control of the HCH and that are less dependent on the behavior of external entities, such as specialists, hospitals, and patients. Specifically, we found that some processes of care for patients with diabetes, e.g., LDL-C screening, suggested a positive trend among HCH practices (**Table 7-5**). This was true among all Medicare beneficiaries, as well as within the subgroup of beneficiaries with multiple chronic conditions (**Table 7-12**). This subgroup also was more likely to receive medical attention for nephropathy and all four diabetes tests. For other process measures for diabetes care, we observed findings that were uncertain, but often positive in 1 of the 2 years we studied. The focus on these processes may have been related to the requirement that practices report data on these measures and others to Minnesota Community Measurement and that these data were used in a publicly available ranking of clinics in the state.

The utilization results are harder to assess in Minnesota. Although we did not find significant differences in the numbers of primary care visits, medical specialist visits, or surgical visits among patients of HCH practices as compared to non-PCMH practices, we found that the share of total visits for primary care increased among HCH practice patients (**Table 7-7**). To the extent that the HCH initiative tried to emphasize primary care, this finding was expected. However, although the directions of the trends were consistent, it was somewhat surprising that neither the trends in the number of primary care visits nor the number of other visits were significant. In this instance, it appeared that measuring primary care visits as a share of total visits uncovered a trend not observed in the underlying volume measures upon which the share was based.

One reason that we did not see an increase in primary care visits perhaps was that the HCH initiative tried to promote more non-face-to-face contact, largely with care coordinators. This would not be captured in claims data that only document face-to-face contacts. As we heard from practices during our site visits, the commitment to the HCH approach was strong and it appeared to promote improved primary care even when practices did not receive the extra payments. The analysis of 30-day unplanned hospital readmissions provided further evidence that the culture of primary care was changing among HCH practices. Although we did not observe an increase in follow-up visits after a discharge among beneficiaries in HCH practices, we observed a significant reduction in unplanned readmissions (**Table 7-7**). This perhaps was result of efforts by care coordinators to reach out to patients by phone after discharge to make sure that they understood the instructions they were given and got any required follow-up care on a timely basis. The association between the HCH initiative and readmissions may have been an amplification of the broader statewide campaign entitled *Reducing Avoidable Readmissions*

*Effectively (RARE)*, which was underway at the same time as this demonstration. Alternatively, our findings perhaps suggested that practices likely to participate in the MAPCP Demonstration were also more likely to engage in RARE campaign and follow its approach. RARE encouraged discharge planning, follow-up calls, follow-up visits, and a range of other approaches to reduce readmission rates. Our findings suggested that any changes associated with RARE seemed to be greater among HCH practices.

The associations between the HCH initiative and Medicare spending were limited. We found no significant difference in the growth in overall Medicare spending among HCH practices compared to non-PCMH practices (**Table 7-10**). Moreover, although many HCH providers and care managers shared anecdotal evidence of reduced rates of ER use, spending on ER visits not resulting in hospitalization showed a slight increase. Among the spending categories we examined, we found an increase in outpatient spending (including spending in hospital outpatient departments, FQHCs, and RHCs) and a decrease in spending for specialty physician care. Although it was unclear if these findings were linked, the specialty care spending result could be related to more effective use of primary care providers and care coordinators, which perhaps reduced the need for high-cost specialty care, and to the expansion of ACOs and total cost of care contracts in Minnesota, which gave HCHs an incentive to refer patients to more cost-conscious specialists. We saw even larger decreases in expenditures on specialty care among Medicare beneficiaries with multiple chronic conditions—the main population targeted by HCH practices for their care management services (**Table 7-15**).

Our other analyses of beneficiaries with multiple chronic conditions were generally consistent with findings from our analyses of the broader population of Medicare FFS beneficiaries. One noteworthy difference was that, for this higher-need subgroup, we did not find that 30-day unplanned readmissions were significantly lower among HCH practices, although trends were in the right direction (**Table 7-14**). Medicare home health spending was significantly higher for beneficiaries with multiple chronic conditions in HCH practices (**Table 7-15**). This finding also could be related to the RARE campaign to help connect patients with health home services post-discharge to reduce avoidable readmissions. Therefore, it may be that efforts were being made to reduce avoidable readmissions, but the effects were not yet apparent in this high-need subgroup.

Practices told us that they were doing more to address the needs of patients with behavioral health issues, but that the payment system did not adequately recognize the additional resources required to deal with these patients. The data showed that more was being spent on services in which the patient's principal diagnosis was a behavioral health condition among Medicare beneficiaries participating in the demonstration (**Table 7-17**). This increase is associated with a significant increase in behavioral health inpatient admissions but no other changes in other measures of utilization that we analyzed (**Table 7-18**).

The best estimate of overall savings from the MAPCP demonstration in Minnesota suggested that the program cost Medicare about \$20 million over the first 2 years, but this estimate was not significantly different from zero (**Table 7-10c**). Given that a relatively small share of practices billed for HCH services, it should have been easier to achieve savings net of program costs, but that is not what we observed. In light of this, the low rate of provider billing for HCH services may have prevented the federal costs of the MAPCP Demonstration from

being higher than they were over this 2-year period. Despite the lack of evidence of savings to the Medicare program, practices were committed to the HCH initiative and saw it as a foundational element for the future evolution of health care in Minnesota through ACOs and the State Innovation Model. It remains possible that the changes practices made in their delivery of care may take more time to affect utilization and expenditures.

## CHAPTER 8

### MAINE

In this chapter, we present qualitative and quantitative findings related to the implementation of the Maine Patient-Centered Medical Home (PCMH) Pilot, Maine's preexisting multi-payer initiative, which added Medicare as a payer to implement the MAPCP Demonstration. We report qualitative findings from our second of three annual site visits to Maine, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the association of the demonstration with changes in our five outcome domains, as described in *Section 1.1.2*. We also report characteristics of participating practices in the state initiative.

For the second site visit, which occurred October 28 through 30, 2013, four teams traveled across the state, covering a geographic region from south of Portland and north to Bangor. The site visit focused on changes and implementation experiences occurring since the last site visit in September 2012. During the site visit, we interviewed providers, nurses, and administrators from participating practices and collaborating organizations, including staff from community care teams (CCTs), to learn about the perceived impact of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's entrance. We met with key state officials involved with the implementation of the MAPCP Demonstration to learn about efforts to support practice transformation, such as learning collaboratives, and how specific performance goals were established. We also met with payers to hear about their experiences with implementation and learn whether the payments to practices were effective in terms of outcomes to date or whether modifications were warranted. We met with patient advocates and provider organizations to learn if they observed an improved beneficiary experience with care and changes to the delivery of care.

This chapter is organized by major evaluation domains. *Section 8.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in the Maine PCMH Pilot. *Section 8.2* reports practice transformation activities. Subsequent sections of this chapter report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 8.3*); access to care and coordination of care (*Section 8.4*); beneficiary experience with care (*Section 8.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 8.6*); and special populations (*Section 8.7*). The chapter concludes with a discussion of the findings (*Section 8.8*).

#### 8.1 State Implementation

In this section, we present findings related to the implementation of Maine's PCMH Pilot and changes made by the state, practices, and payers in the second year of the MAPCP Demonstration. We focus on providing information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?

- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors are affecting implementation?

The state profile in **Section 8.1.1** of this report, which describes the current status of major features of the state's initiative at the time of this report and the context in which it operates, drew on a variety of sources, including quarterly reports submitted to the Centers for Medicare & Medicaid Services (CMS) by Maine PCMH Pilot project staff; monthly state-CMS calls; news articles; state and federal Web sites; and the site visit conducted in October 2013. **Section 8.1.2** presents a logic model reflecting our understanding of the link between specific elements of the Maine PCMH Pilot and expected changes in outcomes. **Section 8.1.3** presents key findings gathered from the site visit regarding the implementation experience of state officials, payers, and providers during the second year of the MAPCP Demonstration. We conclude with lessons learned during the first 2 years of the MAPCP Demonstration in **Section 8.1.4**.

### **8.1.1 Maine State Profile as of September 2013 Site Visit**

The Maine PCMH Pilot began in 2008 following the recommendations of a bipartisan legislative Commission to Study Primary Care Medical Practice. The PCMH Pilot is intended to transform Maine's primary care delivery system to one that is patient-centered, effective, efficient, and accessible.

Three organizations launched the Maine PCMH Pilot: Maine Quality Forum (part of the Dirigo Health Agency, a government agency overseeing the state's subsidized insurance program), Maine Quality Counts (a nonprofit collaborative of insurers, providers, and others), and the Maine Health Management Coalition (a nonprofit employer and union-led coalition).<sup>1</sup> In 2009, after securing the participation of the state Medicaid program, 22 adult and four pediatric practices were chosen to participate in the Maine PCMH Pilot. On January 1, 2010, the Maine PCMH Pilot commenced with the participation of Medicaid (called MaineCare) and three major private health insurers (Anthem Blue Cross Blue Shield, Harvard Pilgrim, and Aetna). Despite a change in state administration, support for the Maine PCMH Pilot continued with an additional appropriation for Medicaid payments in the 2011 state budget. Additional financial support for implementation of the Maine PCMH Pilot came from the Dirigo Health Agency, the Maine Health Access Foundation, and other private foundations.

Medicare began participating as a payer in the Maine PCMH Pilot on January 1, 2012, with the 22 adult practices participating in the Maine PCMH Pilot. In January 2013, the Maine PCMH Pilot grew significantly with a Phase 2 expansion, adding 50 additional practices and two additional community care teams (CCTs).

**State environment.** Healthcare in Maine is organized primarily as a FFS system across public and private payers. As of 2012, a small percentage (16%) of Medicare beneficiaries were

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<sup>1</sup> The three PCMH conveners also participated in Aligning Forces for Quality, the Robert Wood Johnson Foundation-funded initiative to encourage public reporting of quality data and to provide quality improvement assistance.

participating in Medicare Advantage plans. Major private insurers in the state are Anthem Blue Cross Blue Shield; Aetna; CIGNA; Harvard Pilgrim; and Maine Community Health Options, a Consumer Operated and Oriented Plan (CO-OP) Program funded under the Affordable Care Act. All but CIGNA participate in the Maine PCMH Pilot.

MaineCare operates statewide as a primary care case management program. The Maine legislature approved cuts in Medicaid in the 2011–2012 legislative session, resulting in reduced benefits for approximately 8,000 beneficiaries in the Medicare Savings Program, an insurance assistance program for eligible Medicare beneficiaries, and loss of coverage for approximately 12,600 parents with incomes of from 133 to 200 percent of the federal poverty level, as of March 2013. This also resulted in the closure of the Dirigo Health Agency at the end of 2013. Since this agency housed the Maine Quality Forum, it was unclear where the Maine Quality Forum would reside in 2014.

Maine has a number of relevant initiatives across the state that may influence health outcomes for participants in the Maine PCMH Pilot or comparison group populations. These include the following:

- A Section 2703 Health Home State Plan Amendment was approved by CMS in 2013 to align Maine’s Medicaid health home criteria with the Maine PCMH Pilot. The Maine PCMH Pilot Core Expectations (described in the Provider Expectations section) were used as qualification criteria for participation in the MaineCare Health Homes initiative. Quality Counts and MaineCare collaborated to produce a unified application and selection process for Phase 2 expansion PCMHs and for MaineCare Health Homes. The Quality Counts management team made a site visit to each practice that applied to assess their progress in meeting the Core Expectations; those that were further along were selected for participation in the expansion of the Maine PCMH Pilot, while the remaining approved practices were Health Homes.<sup>2</sup>
- The Maine Health Management Coalition, one of the three Maine PCMH Pilot conveners, encourages health plan participation in the Maine PCMH Pilot and supports data collection and reporting efforts.
- HealthInfoNet is the nonprofit organization operating the state’s health information exchange (HIE) and serving as the Maine Regional Extension Center. Many PCMHs are part of the systems that connect to HealthInfoNet, although HealthInfoNet’s full operationalization is expected to continue throughout the demonstration. HealthInfoNet is using additional funding, available through Health Information Technology for Economic and Clinical Health (HITECH) and other sources, to increase connectivity with Maine’s other providers. Such efforts include assisting practices with implementation of electronic health record (EHR) systems. As of December 2013, 34 of Maine’s 38 hospitals and many ambulatory care sites were connected to HealthInfoNet.

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<sup>2</sup> In Phase A of the state’s Health Homes initiative, Health Homes were defined as a PCMH paired with a CCT.

- The Bangor Beacon Community project worked to leverage health information technology (health IT) and practice-based care management to improve patient care and quality. Five Maine PCMH Pilot practices (three Penobscot Community Health Center sites and two Eastern Maine Medical sites) participated as part of the Bangor Beacon Community initiative.
- Maine received a State Innovation Models (SIM) Initiative Model Testing award in the first quarter of 2013. Maine Quality Counts was one of the state's three named partners and will provide transformation support to the more than 80 "Health Home Only" practices—practices not participating in the Maine PCMH Pilot—under an extension of the current contract to provide technical assistance to PCMH practices. The Maine Health Management Coalition will provide a range of data analytic, design, and technical support to the testing strategy. HealthInfoNet will provide emergency room (ER) notifications to CCTs, capture health homes' clinical outcomes from EHRs, develop a behavioral health EHR incentive program, and develop a personal health record.

**Demonstration scope.** Maine's MAPCP Demonstration initially included 22 adult Maine PCMH Pilot practices. The Pilot conveners decided to terminate the participation of one of these practices on September 30, 2012, after being notified that the practice was closing by December 2012. In January 2013, 50 additional adult practices were added to the MAPCP Demonstration as part of the Phase 2 Maine PCMH Pilot expansion, all of which participated in Maine's MAPCP Demonstration.

**Table 8-1** shows participation in the Maine MAPCP Demonstration at the end of the first and second years of the demonstration. As a result of the Phase 2 expansion, the number of demonstration practices with attributed Medicare FFS beneficiaries more than tripled between the end of Year One and the end of Year Two, from 21 to 71, and the number of participating providers more than doubled, from 200 to 482. The cumulative number of Medicare FFS beneficiaries ever participating in the demonstration for at least 3 months was 21,497 at the end of Year One and 52,485 at the end of Year Two—an increase of 144 percent.

**Table 8-1**  
**Number of practices, providers, and Medicare fee-for-service beneficiaries participating in the Maine PCMH Pilot**

Participating entities	Number as of December 31, 2012	Number as of December 31, 2013
PCMH Pilot practices <sup>1</sup>	21	71
Participating providers <sup>1</sup>	200	482
Medicare FFS beneficiaries <sup>2</sup>	21,497	52,485

NOTES:

- PCMH Pilot practices include only those practices with attributed Medicare FFS beneficiaries, and participating providers are the providers that are associated with those practices. The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries ever assigned to participating PCMH Pilot practices and participating in the demonstration for at least 3 months.

ARC = Actuarial Research Corporation; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

SOURCES: <sup>1</sup> ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

The state originally had projected that a total of 260,000 individuals would participate across all payers. The number of all-payer participants actually enrolled nearly doubled between December 31, 2012, and December 31, 2013, from 68,627 to 125,232, but remained less than half of the projected numbers.

Of the five participating payers as of December 2013, Medicare was predominant, covering 37 percent of Maine PCMH Pilot participants, followed by Medicaid (22%), Anthem Blue Cross Blue Shield (18%), Aetna (18%), and Harvard Pilgrim (5%).

**Table 8-2** displays the characteristics of the practices with attributed Medicare FFS beneficiaries participating in the Maine PCMH Pilot as of December 31, 2013. There were 71 participating PCMHs with an average of seven providers per practice. The majority were office-based practices (57%), but federally qualified health centers (FQHCs) (18%), critical access hospitals (CAHs) (14%), and rural health clinics (RHCs) (11%) also participated. These practices were distributed among metropolitan (46%), rural (20%), and micropolitan (33%) areas.

**Table 8-2**  
**Characteristics of practices participating in the Maine PCMH Pilot as of December 31, 2013**

Characteristic	Number or percent
Number of practices (total)	71
Number of providers (total)	482
Number of providers per practice (average)	7
Practice type (%)	
Office-based practice	57
Federally qualified health center	18
Critical access hospital	14
Rural health clinic	11

(continued)

**Table 8-2 (continued)**  
**Characteristics of practices participating in the Maine PCMH Pilot**  
**as of December 31, 2013**

Characteristic	Number or percent
Practice location type (%)	
Metropolitan	47
Micropolitan	20
Rural	33

ARC = Actuarial Research Corporation; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

SOURCE: ARC Q9 MAPCP Demonstration Provider File. (See Chapter 1 for more details about this file.)

In **Table 8-3**, we report demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating Maine PCMH Pilot practices during the demonstration period (January 1, 2012 to December 31, 2013). Beneficiaries with fewer than 3 months of eligibility for the demonstration are not included in our evaluation or this analysis. Of the beneficiaries assigned to Maine PCMH Pilot practices during the first 2 years of the demonstration, 30 percent were under the age of 65, 39 percent were between the ages of 65 and 75, and 22 percent were between the ages of 76 and 85, with a mean beneficiary age of 67 years. Beneficiaries were mostly White (98%); 41 percent of the participants were urban dwelling, and 56 percent were female. Forty-eight percent were dually eligible for Medicare and Medicaid, and 39 percent were eligible for Medicare originally because of a disability. One percent of beneficiaries had end-stage renal disease (ESRD), and less than 1 percent resided in a nursing home during the year before assignment to a demonstration practice.

**Table 8-3**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Maine PCMH Pilot from January 1, 2012, through December 31, 2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	52,485
Demographic characteristics	
Age < 65 (%)	30
Ages 65–75 (%)	39
Ages 76–85 (%)	22
Age > 85 (%)	9
Mean age	67
White (%)	98
Urban place of residence (%)	41
Female (%)	56
Dual eligibles (%)	48
Disabled (%)	39
End-stage renal disease (%)	1
Institutionalized (%)	0
Health status	
Mean HCC score groups	1.12
Low risk (< 0.48) (%)	22
Medium risk (0.48–1.25) (%)	50
High risk (> 1.25) (%)	28
Mean Charlson Index score	0.91
Low Charlson Index score (= 0) (%)	58
Medium Charlson Index score ( $\leq 1$ ) (%)	21
High Charlson Index score (> 1) (%)	21
Chronic conditions (%)	
Heart failure	5
Coronary artery disease	12
Other respiratory disease	14
Diabetes without complications	20
Diabetes with complications	5
Essential hypertension	40
Valve disorders	3
Cardiomyopathy	1
Acute and chronic renal disease	7
Renal failure	3
Peripheral vascular disease	2
Lipid metabolism disorders	30
Cardiac dysrhythmias and conduction disorders	11
Dementias	1
Strokes	1
Chest pain	5

(continued)

**Table 8-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Maine PCMH Pilot from January 1, 2012, through December 31, 2013**

Demographic and health status characteristics	Percentage or mean
Chronic conditions (%) (continued)	
Urinary tract infection	5
Anemia	7
Malaise and fatigue (including chronic fatigue syndrome)	3
Dizziness, syncope, and convulsions	7
Disorders of joint	10
Hypothyroidism	9

NOTES:

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to a PCMH after the start of the demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid.

HCC = Hierarchical Condition Category; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

SOURCE: Medicare claims files.

Using three different measures—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions—we describe beneficiaries' health status during the year before their assignment to a Maine PCMH Pilot practice. Beneficiaries had a mean HCC score of 1.12, meaning that Medicare beneficiaries assigned to a Maine PCMH Pilot practice were 12 percent sicker than an average Medicare FFS beneficiary; thus, they were predicted to have been 12 percent more costly than an average Medicare FFS beneficiary during the year before their assignment to a Maine PCMH Pilot practice. Fifty-eight percent of the beneficiaries had a low (zero) score on the Charlson Comorbidity Index, indicating that they did not receive medical care for any of the 18 clinical conditions in the index in the year before assignment to a participating Maine PCMH Pilot practice.

The most common chronic conditions diagnosed were hypertension (40%), lipid metabolism disorders (30%), diabetes without complications (20%), other respiratory disease (14%), coronary artery disease (12%), and disorders of joint (10%). Less than 10 percent of beneficiaries were treated for any of the other chronic conditions.

**Practice expectations.** All Phase 1 practices were required to achieve 2008 National Committee for Quality Assurance (NCQA) Physician Practice Connections (PPC®) PCMH™ Level 1 recognition within 6 months of selection for the Maine PCMH Pilot; Phase 2 practices were required to achieve recognition under the 2011 NCQA PPC® PCMH™ standards before participating in the Maine PCMH Pilot and to meet the Core Expectations. As of December 31,

2013, nine practices achieved Level 1 recognition, 14 practices achieved Level 2, and 52 practices achieved Level 3.<sup>3</sup>

Practices also were required to meet the Pilot's 10 Core Expectations. Core Expectations included

- Demonstrated leadership commitment to improving care and implementing the Maine PCMH Pilot;
- Team-based approach to care;
- Population risk stratification and management of patients at risk for adverse outcomes;
- Enhanced beneficiary access to care;
- Practice-integrated care management;
- Behavioral and physical health integration;
- Inclusion of patients and families in implementing the Maine PCMH model;
- Connections to the community, including the local Healthy Maine Partnership (a health promotion partnership between community partners and state and local government) and other community resources;
- Commitment to reducing unnecessary health care spending, reducing waste, and improving the cost-effective use of health care services; and
- Integration of health IT to support improved communication with and for patients.

As a leadership component, PCMH practices identified care management staff, established clear roles and responsibilities for these staff, and provided care management training. To foster quality improvement and practice transformation, practices were required to participate in three learning collaborative sessions each year and regular PCMH practice leadership team webinars held by Quality Counts. The Maine PCMH Pilot also identified 31 clinical quality measures to assess performance and gauge impact, which practices were required to report quarterly.

**Support to practices.** Participating practices receive payments from public and private payers to support care management activities. Beginning in January 2010, Medicaid began paying practices \$7.00 per member per month (PMPM), half of which is the standard Medicaid primary care case management payment and half of which is an additional care management fee. Starting in January 2013, Medicaid began paying practices participating in the MaineCare Health

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<sup>3</sup> This number included the four pediatric practices that are part of the Maine PCMH Pilot, but not included in the MAPCP Demonstration.

Homes initiative a total of \$12.00 PMPM. All but two Maine PCMH Pilot practices are serving as Health Homes and receive this payment. Practices receive a care management fee of approximately \$3.00 PMPM (specific payment amounts are confidential) from commercial insurers. Medicare pays a care management fee of \$6.95 PMPM to participating practices, and an additional \$2.95 is paid to the CCTs to support care coordination, for a total of \$9.90 PMPM to support the PCMH Pilot. Between January 1, 2012, and December 31, 2013, Maine PCMH Pilot practices and CCTs received a total of \$7,291,285 in payments from Medicare.

The Maine PCMH Pilot launched CCTs in January 2012 to provide additional care management support to participating practices' most complicated patients. Eight CCTs each serve one or more PCMHs, providing their patients with services including needs assessment, nurse care management, panel management (i.e., identifying high-risk patients, scheduling appointments, and referring patients to care managers and other team members), brief intervention and referral for mental health and substance abuse services, psychiatric prescribing consultation, medication review and reconciliation, transitional care, health coaching, self-management of chronic disease, and connection with community resources. Two additional CCTs were added in 2013 when the demonstration expanded to 50 additional practices. All participating payers support CCT services with additional fees.

- Commercial insurers: The commercial insurers pay \$0.30 PMPM.
- Medicare: Medicare pays \$2.95 PMPM.
- MaineCare: Through December 2012 Medicaid paid \$3.00 PMPM. Starting in January 2013, instead of receiving a PMPM payment from MaineCare for the entire MaineCare panel, CCTs receive a \$129.50 PMPM payment under the MaineCare Health Homes initiative for high-risk Medicaid beneficiaries, who are estimated to be 5 percent of the entire MaineCare panel. CCTs receive this payment for working with practices that are serving as Health Homes, so do not receive it for the two Maine PCMH Pilot practices that are not participating in this initiative.

In addition to the learning collaborative sessions and practice leadership team webinars noted above, quality improvement practice coaching is available from the Maine Practice Improvement Network. Maine PCMH Pilot staff also contract with experts to provide technical assistance to practices for medical home related assistance outside their and the coach's areas of expertise; such subjects included behavioral health integration, connecting practices with community-based support, and health IT support.

Data and analytics to support clinical care, quality improvement, practice transformation, and project evaluation come from various sources. Until 2012, the company Health Dialog had a contract to produce semiannual reports for practices using the Maine Health Data Organization's all-payer claims database. These reports provided practice-level feedback on various dimensions of clinical care and costs. Practices stopped receiving those reports when Health Dialog's contract ended. In late 2013, the Maine Health Management Coalition began to share practice reports based on commercial cost and utilization data; Medicare and Medicaid data were expected to be incorporated into the reports in 2014. HealthInfoNet connected practice and

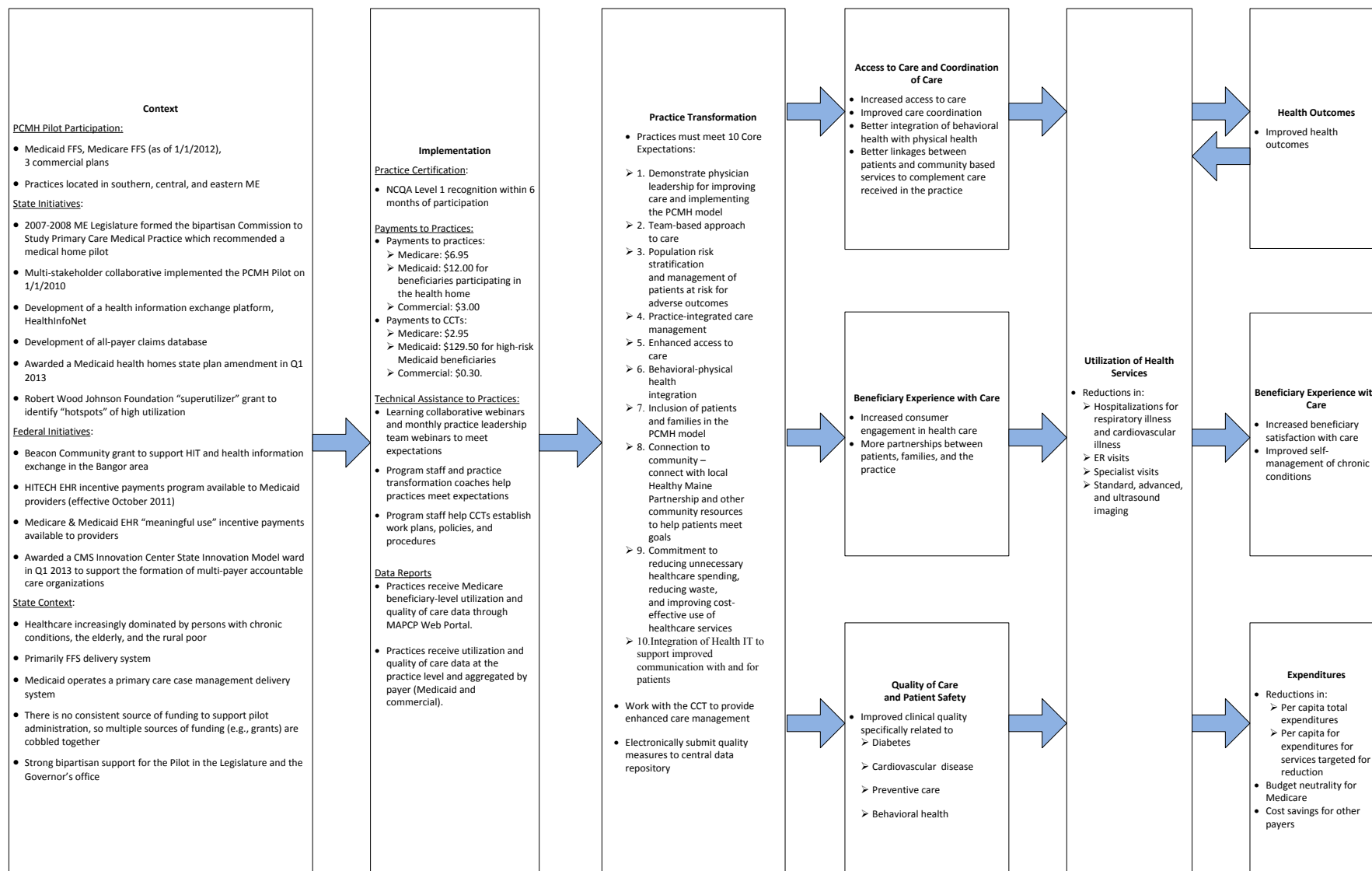
hospital electronic EHRs through the HIE and provided a secure portal for accessing patient information, a centralized patient registry, and a quality reporting tool.

### **8.1.2 Logic Model**

**Figure 8-1** portrays a logic model of Maine's PCMH Pilot. The left-hand side of the figure describes the context for the demonstration. These contextual factors include the scope of payer participation and geographic location of the Maine PCMH Pilot practices, other state and federal initiatives affecting the Maine PCMH Pilot, and key features of the state context affecting the Pilot. The context informs the implementation of the Maine PCMH Pilot, which incorporates several strategies to promote transformation of practices to PCMHs, including NCQA PCMH recognition requirements, payments to practices, technical assistance, and data reports. Beneficiaries in these transformed practices are expected to have better access to care and more coordinated care; receive safer, higher-quality care; and have a better experience with care because they are more engaged in decisions about their care and management of their health conditions. These improvements are expected to promote more efficient utilization patterns. Changes in utilization are expected to lead to improvements in health outcomes (which could, in turn, reduce utilization), greater beneficiary satisfaction with care, changes in expenditures consistent with utilization changes, and reductions in total per capita expenditures, resulting in budget neutrality for the Medicare program and cost savings for other payers involved in the initiative.

**Figure 8-1**  
**Logic model for Maine PCMH Pilot**

8-12



### 8.1.3 Implementation

This section uses primary data gathered from the site visit to Maine in October 2013 and other sources to present key findings from the implementation experience of state officials, payers, and providers to address the evaluation questions described in *Section 8.1*.

#### Major Changes During the Second Year

**Initiative expansion.** In 2013, Maine's demonstration expanded its geographic reach substantially, adding 50 new practices and two more CCTs. Due to this expansion, the number of Mainers in PCMHs increased by 56,605 between the fourth quarter of 2012 and the first quarter of 2013.

**CCT maturation.** CCTs first launched in 2012. During their first year, conveners struggled more than anticipated to define the role of the CCTs. In 2013, the CCTs better understood and performed their work, particularly in providing complex care management and identifying high-risk patients. CCTs also saw their role expand in 2013, as they offered support not only to Maine PCMH Pilot practices, but also to an additional 80 practices that joined MaineCare's Health Homes program, but not the Maine PCMH Pilot.

**Financing technical assistance.** In 2013, Quality Counts began charging the practices for some of the educational and technical assistance programs. These new payments from practices replaced the grant funding that supported Quality Counts activities in the previous year. By all accounts, stakeholders believed Quality Counts did an excellent job in supporting the practices, and the practices found the programs to be of enough value that they were willing to pay for them.

#### Major Implementation Issues During the Second Year

**Adjustments to CCT capacity and expectations.** As noted in the profile, CCTs provided support for the most medically complex, high-risk, high-need, and high-cost patients served by participating practices. In Year Two, some CCTs found that it took more time than anticipated to staff up to capacity, develop relationships, and clearly define their roles with the new practices. Making team-specific adjustments and adequately staffing up, so that CCTs could function better with the additional practices and in unique community circumstances, took time, and there were issues on both the practice and CCT sides. Interviewees suggested that while some practices initially did not embrace the CCTs as enthusiastically as others, acceptance happened relatively quickly.

In the summer of 2013, Quality Counts staff visited all 10 CCTs and 21 of the practices with which CCTs were working with to assess the CCTs' operations. This included looking at the CCTs progress with Core Expectations, their panel size, whether they had access to EHRs, whether they had a process for receiving data directly from the hospital on inpatient admissions and ER visits, and whether they were accessing HealthInfoNet for notifications on patient hospitalizations. The assessment showed variations among CCTs in the level and duration of services provided to clients. As a result, Quality Counts decided to standardize and provide clear expectations for CCT services, including defining 3 months as the expected duration for CCTs to work with a client, with referrals for continued services to the practice's case manager, if needed. Conveners also spearheaded ongoing work with CCTs over the past year to ensure that CCT staff

understood the job—for example, that they were expected to get out of their offices and do home visits.

**Cumbersome payment flow.** Some stakeholders found the Maine PCMH Pilot’s underlying administrative structure to be cumbersome in 2013: money from non-Medicare payers flowed through Quality Counts, which distributed the PMPM payments to participating practices. Payers were not used to making payments to a non-owned or contracted entity like Quality Counts, rather than directly to the practices with which they had an established business relationship. A commercial payer noted ongoing challenges in the ability of Quality Counts to make payments to practices in a timely fashion, given that making payments was not one of the organization’s core competencies. The informant acknowledged that progress had been made, but suggested, “If Quality Counts were a business unit, it would have been much easier.”

**Challenges with the MaineCare health homes attestation system.** MaineCare’s health home initiative required primary practices and CCTs to attest that they provided health home services to a panel of eligible Medicaid beneficiaries. Maine’s system for attesting had several issues when it was implemented that were problematic for CCTs. First, for CCTs to be paid for providing services, patients had to be listed in a Web portal; however, MaineCare did not load any patient lists from January through March 2013, so CCTs could not be paid for services to MaineCare clients during that time.

Second, MaineCare loaded patient lists in the portal in two phases. During the first phase, Stage A, patients with physical health issues were loaded in the portal. The second phase, Stage B, was not scheduled to be launched until 2014 and was for patients with any behavioral health diagnosis (regardless of how mild). This meant that any patients with a behavioral health diagnosis did not appear in the portal in 2013, regardless of whether or not they also had physical health issues. Since these people were not listed in the portal in 2013, they could not receive CCT services, regardless of whether they had comorbid physical conditions meeting the demonstration criteria for referral to a CCT. Recognizing this problem, MaineCare modified the categorization several months after implementation, so that only people with severe behavioral health issues remained in Stage B.

Third, initially the CCTs had worked with patients before lists were loaded in the portal that they believed met demonstration criteria, but these patients did not appear on the MaineCare attestation lists and were not in the portal once the new system was implemented. This meant that CCTs had to make the difficult decision of whether to discontinue CCT services or continue working with these patients without being reimbursed.

**Difficulties with data exchange.** Getting usable data to the practices remained a challenge for the Maine PCMH Pilot. Data exchange through HealthInfoNet was focused primarily on hospitals, not primary care practices. Practices needed integrated claims and clinical data in real time to take action, but this was not available. At the same time, Maine saw a proliferation of portals and reports that allowed providers to review their health homes panel and attest to the provision of health home services. Additionally, the MAPCP Demonstration portal provided information on Medicare beneficiaries, some individual commercial payers had portals with data on their enrollees, and the Maine Health Management Coalition was providing feedback reports to practices. The lack of integration or links across these information sources was burdensome for practices.

**Initiative sustainability.** Sustainability of the Maine PCMH Pilot became a larger concern for the state as implementation proceeded and the MAPCP Demonstration came closer to its end. Sustaining the model would be significantly harder if Medicare was not a strong participant in the multi-payer model. Medicare's involvement was essential in keeping the other payers at the table. As one informant put it: "Why [would Medicare] invest in us and then stop? What kind of a signal does that send?" Medicare's withdrawal at the end of the demonstration raised serious questions about how the Maine PCMH Pilot's quality improvement structure, anchored by Quality Counts, would be funded.

**Financial strains on practices.** A convener suggested that chronic underfunding of primary care for years had left practices without enough money to transform care, even with the additional funds available through the MAPCP Demonstration. One informant noted that precluding Maine from participating in other federal primary care transformation investments during the demonstration period was counterproductive.

### **External and Contextual Factors Affecting Implementation**

**Restrictions on release of state-protected data.** Maine's IT infrastructure and the ability of practices and the state to use data had significant implications for the Maine PCMH Pilot. Interviewees noted that stakeholders in the state began to understand that data was "core to everything we do." During this time, claims and clinical data were not able to be integrated in the state—in part, because the release of state-protected information (e.g., behavioral health data) was prohibited. Several informants mentioned a legislative proposal to allow release of this information, but various providers, including one large health system, remained opposed. This data issue possibly contributed to the perception expressed by some stakeholders that the Maine PCMH Pilot lacked a clear direction for integrating behavioral health with physical health, despite widespread appreciation of and interest in the need to integrate behavioral health care into the primary care setting.

**Impact of other health reform initiatives.** Other reform initiatives in the state were relevant to the Maine PCMH Pilot. Health systems in Maine were rethinking their governance structures and reform priorities as delivery system reform in the state (and nationally) continued, including the movement toward accountable care organizations (ACOs). These changes to the delivery system may potentially affect the outcomes of the Maine PCMH Pilot practices positively or negatively, possibly extensively as more practices adopt these arrangements. One concern noted by several informants was that practices involved in both the Maine PCMH Pilot and ACOs had to track so many different measures that it was difficult for them to focus on the Core Expectations. Some interviewees also felt that tracking so many measures engendered a "checkbox mindset" that interfered with the cultural change that Maine PCMH Pilot conveners were attempting to achieve in practices. Some conveners felt that primary care transformation would continue to be a priority for the state under its SIM award, building on the framework established under the Maine PCMH Pilot. One interviewee reflected: "A big part of the next step [of health reform] is how do you take this [Pilot] and make it statewide and not just in selected practices."

#### **8.1.4 Lessons Learned**

Several key lessons emerged during the second round of site visits.

**A phased-in approach worked.** Lessons learned during the first phase of the Maine PCMH Pilot allowed conveners to anticipate the needs of the 50 Phase 2 practices and helped to ensure a smooth expansion in 2013. For example, the Maine PCMH Pilot’s conveners offered a range of technical assistance to the new practices before launching Phase 2 to prepare them for participation.

**Strong leadership and a common vision were critical.** For the second year in a row, participants praised the Maine PCMH Pilot’s work in bringing a variety of stakeholders together around a common table. This strong leadership, coupled with a management team that had a cohesive vision for success, was a critical success factor. Thinking about the contributions they could make from their different stakeholder positions had proven to be critically important in Maine. Elements like the 10 Core Expectations agreed upon by stakeholders helped to sustain a common vision and structure as implementation of the initiative proceeded.

**Transformation took time.** Stakeholders felt a 4-year Maine PCMH Pilot was not long enough to realize changes of the magnitude envisioned. One participant conceded, “I think we need to be prepared for [less] savings than we hoped for.”

In hindsight, structuring each practice’s specific goals would have been helpful. One convener reflected that, “What we should have done is tie reduction in utilization and cost to certain things by practice. We should have sat down with each practice, looked at their data, and collaboratively come up with a plan for how they were going to make this [Pilot] revenue neutral.”

## **8.2 Practice Transformation**

This section seeks to answer evaluation research questions related to describing the features of the practices participating in the Maine PCMH Pilot, identifying changes made by practices to take part in the demonstration and meet participation requirements, describing technical assistance to practices, summarizing views on the payment model, and describing experiences with the initiative in Year Two of the demonstration.

As with last year’s evaluation, the participating practices were universally enthusiastic about the Maine PCMH Pilot and the progress being made in delivering high-quality, patient-centered care in a team-based medical home setting. Interviews conducted in the second year of the Maine PCMH Pilot found that the initial practices evolved and improved their PCMH functionality, and that the 50 new practices that joined in January 2013 were “up to speed” and did not find the criteria for participation in the practice daunting. Compared to the initial practices, the new practices seemed to have had a much easier transition into the program because many had already adopted PCMH practices before joining the demonstration. We identified five examples of experiences contributing to this facilitated transition:

1. Practices chosen for this second cohort seemed well prepared for the transition, in that many already had an EHR and most had attained NCQA PPC® PCMH™ recognition and already operated as a PCMH in many ways.
2. Some new practices were in the same practice network as practices that were part of the initial Maine PCMH Pilot. This allowed the new practices to jumpstart their involvement by building on the earlier work of the initial practices.

3. One of the initial Maine PCMH Pilot practices set up a local “learning collaborative” with three other small practices (that became expansion practices) in the area to share learning about PCMH topics.
4. Several new practices were members of ACOs, and the emphasis on primary care and care coordination enhanced their participation in the Maine PCMH Pilot.
5. Many new practices participated in other programs promoting PCMHs, such as the PC-2 (Primary Care Practice Collaborative) established by a payer (Anthem Blue Cross Blue Shield), or the MaineCare Health Home initiative.

### **8.2.1 Changes Practices Made During Year Two**

Practices made several changes related to NCQA PPC® PCMH™ recognition, administration, and health IT to participate in the MAPCP Demonstration.

**PCMH recognition and practice transformation.** During the Year One site visit, practices conveyed a general sense of being overwhelmed, of not knowing what issues to address first, and of struggling with the many issues involved in hiring new staff and developing new policies and practices. Other challenges included the difficult process of obtaining initial NCQA certification and implementing an EHR, including the necessary customization and template building.

By the time of the second visit, practices from the original Maine PCMH Pilot cohort universally seemed more comfortable with their participation in the PCMH Pilot. They were accustomed to working with their EHR systems; the NCQA renewals seemed much easier than the initial certification process; and the many internal staffing and process of care changes made during the first year were now in place and working.

One thing that had not changed was the focus of participating practices on the 10 Core Expectations issued as guidance to all practices at the outset of the Maine PCMH Pilot. A year later, the original practices still were very much engaged with perfecting these: “You will never be done. You will always be improving. We don’t think of them (the core expectations) separately any more. They are built into the system.”

In Year Two, practices focused much more effectively on improving care through quality improvement, a process not possible until the infrastructure elements (staffing, policies, care coordination arrangements) were in place and working well. During the second year, practices gained capacity, trained staff, improved services, and used data in an effort to improve outcomes.

All of the initial practices interviewed had enhanced their behavioral health offerings compared to the first Maine PCMH Pilot year. Most practices used embedded licensed clinical social workers for this purpose, and some had part-time psychologists. Several practices mentioned providing their physician staff with continuing medical education activities focused on anxiety and depression management, with the expectation that primary care staff would be able to manage these common problems adequately in lieu of a subspecialty referral. Maine Medical Center started a behavioral health home, and practices affiliated with this hospital referred patients to this new program.

Almost all practices interviewed had established functioning patient advisory councils during Year One (one of the 10 Core Expectations), and both initial and expansion practices with councils were happy and enthusiastic about their value. Practices sought input from their councils on how to improve patients' waiting room experience and customize patient education materials. According to one practice's lead physician, "We have a patient council. They have helped us in dedicated ways. They are a great group. They've helped us with [designing] patient handout information—making it more readable, helped us redesign our waiting room, helped us with the TV content [video programming available in the waiting room]." Practices also sought advice from councils on ideas to help to decrease wait times for appointments and improve provider continuity (measured as the percentage of time patients saw their own provider).

Some practices mentioned establishing group clinics, allowing one of the practice's clinical staff to meet regularly with a group of patients all sharing the same disease or clinical issue, such as diabetes or hypertension. One practice developed a series of group clinics on rotating topics; the program was extremely popular with their patients and efficient in terms of staff time, with respect to being able to interact with many different patients at once. Different groups met monthly and focused on chronic obstructive pulmonary disease (COPD), diabetes, asthma, and prenatal care. At another practice, a group focused on recently discharged patients met weekly. One provider noted, "We've done diabetes group medical programs to help foster self-care. Patients like that—it has fostered relationships in the community that have been sustained." One practice developed a free "Health Gains" program promoting exercise and healthy eating at regular meetings, where patients got free weigh-ins and blood pressure checks. A lecture was given quarterly. Each patient had a binder to chart their progress. A practice physician said: "We've been hearing from our patients that they want to be more active and make healthy choices. We tried to figure out ways to do that and came up with this program that is free for patients."

As discussed below (see **Section 8.2.2**), practices had access to more data related to quality metrics this year and used this more effectively to improve care. Practices uniformly looked at data to identify high-complexity, high-use patients. During the second year, some practices had access to staff specially trained and devoted to data analysis. Several practices used previsit summaries to address gaps in preventive services or quality measures, something not observed during the first year.

Two issues from the first year were voiced more strongly in Year Two in regard to data collection and utilization. First, some practices voiced resentment over the data collection requirements. One physician commented: "They want to know how quickly you answer your phone calls. A lot of tracking and reporting that really doesn't make us a better practice. I realize that it's necessary in big practices that don't have continuity, but we're a small practice and we know our patients." Second, many practices felt they had moved too quickly from famine to feast in regard to both collecting and reviewing quality data. Several interviewees said that they felt "overloaded" with data; either there was too much data or they needed to be better organized. One noted: "One of the frustrations is that there is so much data to pore through. It's hard to take it and use it constructively."

Many practices interviewed in both Years One and Two had moved further along in enhancing care coordination during Year Two, adding staff and refining the roles of existing staff to allow different members of the care team to function at the top of their licenses. All practices interviewed in Year Two received daily alerts from their local hospitals on patients

seen in the ER or admitted, and the practices established protocols for proactive outreach to coordinate care for these transition patients. Many practices called each of these patients to follow up on their care needs.

Postvisit summaries were provided routinely to all patients at many practices. Summaries included an updated medication list, a list of all ordered tests and consults, and, in some practices, a customized summary of the visit or a message from the provider.

Many practices operated a patient portal, allowing e-mail between providers and their patients, and permitting patients to make their own appointments and request medication renewals. One practice had transitioned to an “open chart” format where patients could see their progress notes. In most practices, patients received a visit summary sheet, which included their problem list, medications, tests ordered, and next appointment.

In both years, practices appreciated the services provided by the CCTs. The practices generally met with their CCT nurse coordinator weekly, and the coordinator was on-site for a session or day each week at most practices. The practices had various approaches to designating the most appropriate patients for CCT care coordination, including patients identified through the RTI International and MaineCare portals and recently discharged patients. In general, the practices were very satisfied with the CCT services, and all felt that they received adequate care coordination support from the CCTs, even though the number of patients assigned to a particular care manager and the mix of patients chosen varied somewhat from practice to practice.

**Practice staffing changes.** Throughout Year Two, practices fine-tuned their mix of staff and responsibilities, without major staffing changes at any sites. As in Year One, most staffing adjustments were made to improve care coordination, and practices that could afford it had added staff to assist with coordination. Most practices started using lower-paid staff in Year One (mostly medical assistants) to take over some aspects of patient interactions, and this trend continued in Year Two. Most sites used these staff to help meet performance targets for providing preventive care (vaccinations, cancer screenings), medication reconciliation, and motivational interviewing, for example, in regard to smoking cessation.

**Health information technology.** All practices had well-established EHRs, many of which were upgraded to provide additional functionality since the first Maine PCMH Pilot year. The learning curve problems identified in the first Pilot year seemed to have been overcome, although several practices mentioned significant problems with their EHR upgrades, such as a new scheduling package that introduced a host of unanticipated complications. Many practices had recently attested to meeting Meaningful Use standards (MU-1).

Practices in general used the EHRs for progress notes, ordering tests and consults, documenting services provided, and electronic prescribing. Most practices were not directly interfaced with laboratories or to other practice sites. Consultations and lab results generally were returned by fax and subsequently scanned or hand-entered into the EHR. Only a small number of the practices interfaced effectively with their local hospital in terms of being able to view progress notes or discharge summaries.

HealthInfoNet was well used by hospital staff but, as, in Year One, it generally was not used by ambulatory practices. Another issue noted during the site visit was that Maine General

Hospital focused on its own data warehouse and did not allow its affiliated practices access to HealthInfoNet.

### **8.2.2 Technical Assistance**

The extensive technical assistance program provided by Quality Counts was again very popular in Year Two and valued by all practices. Each practice had sent multiple staff members to the day-long learning sessions, and all participated in the monthly webinars. The topics discussed were considered appropriate, interesting, and valuable. Learning sessions served both an educational and a social function, as voiced by one practice manager: “[One] nice thing is having a forum where you can meet with others and share ideas. You get energy going to these meetings when people give you good feedback.” Quality Counts was in the process of obtaining a state-wide subscription to the American College of Physicians’ Practice Advisor service, which would make available a new asynchronous learning option for providers. Each participating practice confirmed that it had monthly visits from the Quality Counts coach and, separately, a monthly visit from an external practice coach. As before, practices were unanimously enthusiastic about the Maine PCMH Pilot program management and oversight provided by Quality Counts.

Compared to practices in Year One, practices in Year Two clearly had more and better data regarding both quality and utilization. Many practices used the RTI reports on Medicare beneficiaries, but also looked at internal data and the Care Improvement Registry data provided by Maine Health Management Coalition. Practices in ACOs received data from their parent organizations. In Year One, data typically were reviewed quarterly, while in Year Two, many practices reviewed aggregated data every month.

Also new during the second year, practices received quarterly patient satisfaction data through Maine Health, using the Picker Institute’s patient-experience survey instrument. Almost every practice knew exactly which elements they scored well on and which elements needed attention. Many practices also administered their own patient satisfaction surveys to monitor satisfaction in real time.

### **8.2.3 Payment Support**

As in Year One, funding derived from participation in the Maine PCMH Pilot typically was used to enhance care coordination and quality monitoring. According to a practice manager: “We have hired someone to do auditing of the charts. We have a floater medical assistant to help keep things rolling and another person who does the tracking and reporting that needs to be done from NCQA.” In smaller practices, the funding went to support the bottom line: “The financial incentive has been a godsend to a little private practice.” In the larger practices, the funds often went to a parent organization, and it was unclear to practice staff exactly where the money was spent.

### **8.2.4 Discussion of Practice Transformation**

In Year Two, the initial Maine PCMH Pilot practices had matured and progressed, and the expansion to include 50 new practices had gone extremely well, with an easier and faster acclimation period.

Provider satisfaction was decidedly bimodal. Several practices related that physician satisfaction, despite the gratifying aspects of practicing in an advanced PCMH, was at an all-time low because of, according to practice interviewee, “too much documentation, too much scrutiny, too much work.” This respondent continued, “So now we have to tell them (providers), ‘We know you’re spending all this time capturing quality data, meaningful use, and there is more to change.’ This is all added work for them.”

In contrast, other providers were almost ecstatic about the Maine PCMH Pilot and their participation. One physician said the Maine PCMH Pilot had been an extremely positive experience for him personally. He had struggled to provide medical home services as a single provider, and the Pilot gave him the structure, support, and feedback to achieve this much more effectively. Other practices mentioned many other positive aspects of participating in the Maine PCMH Pilot, and they focused on being able to provide high-quality, patient-focused care that also promoted population health goals. One said, “It feels good; it re-energizes you.” Moreover, providers who were part of the original Maine PCMH Pilot and enthusiastic in the first year were even more so this year. As one said, “The second year you can start seeing the fruits of your labor. The data reporting has been good. You have to report on quality measures. Things that we thought that we were doing, when we tracked them we could see that we haven’t been doing things. Now I can see trends.”

### **8.3 Quality of Care, Patient Safety, and Health Outcomes**

#### **8.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

At the Year One site visit, practices spoke of a variety of initiatives aimed at improving quality of care, patient safety, and health outcomes. The most frequently cited initiatives included the use and review of EHR and utilization data to guide quality improvement initiatives, medication reconciliation, and integration with the CCTs to identify high-risk patients in need of extensive care management. During the Year Two site visit, practices spoke at length of these same initiatives. In the year between the two site visits, practices reported quarterly on 32 quality indicators related to diabetes, cardiovascular disease, and preventive care use. The quality indicator data were used by Maine PCMH Pilot staff to assess whether or not practices were meeting indicator-specific performance targets, and the data were provided to the state-based evaluation team at the University of Southern Maine for data analysis. As a result of this data collection effort, use of data figured prominently in the discussion during the Year Two site visit.

During the Year Two site visit, many practices reported extensive use of their EHRs to build condition-specific patient registries (e.g., diabetes, childhood asthma, immunizations, preventive care screenings) to monitor population health. They then analyzed the data in the registries to identify populations with gaps in care. Practices implemented various activities to address these gaps, including using medical staff to call patients before a visit to order lab tests to be done before the visit, or having physicians call patients and ask them to schedule an appointment for certain tests or screenings. Practices also made concerted efforts during visits to address gaps in care by ordering needed tests and conducting screenings and counseling (e.g., for smoking cessation or depression), as needed. Several practices also spoke of their efforts over the past year to use the EHR-based registry data to examine changes over time in quality of care

metrics; they reported that examining their trends helped hone their efforts to ensure patients were receiving evidence-based care.

Efforts to reconcile medications at hospital discharge also were considered a key patient safety activity by several practices. Staff in these practices received daily or monthly discharge reports from local hospitals, and they called their patients to discuss medication reconciliation and to schedule a follow-up appointment with the primary care provider.

Another approach to improving quality and patient safety undertaken by practices in the past year was educating patients about health conditions, medications, and self-management strategies. Practices mentioned a range of patient information and educational tools, including post-visit summaries, medication lists, problem lists, as well as lists of health goals for a patient, hand-outs about managing specific health conditions and the importance of preventive care, and bulletin boards focused on various health topics in patient waiting rooms. For some practices, these were new initiatives implemented over the past year; for others, they were a continuation of activities implemented at the beginning of the Maine PCMH Pilot. One practice also mentioned its participation over the past year in the Choosing Wisely initiative (a campaign to promote conversations between physicians and patients about choosing care that is evidence-based, not duplicative, free from harm, and truly necessary).

There were several other initiatives implemented by some practices to improve quality and patient safety. These included adding staff to the care team (discussed in **Section 8.4.1**), using phone translation services during visits with non-English speakers, and restarting an internal quality team to review various utilization and quality metric reports provided by outside organizations (e.g., Medicare and Medicaid) and reports generated from the EHR.

### **8.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes**

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization measures. The results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in **Section 8.3.3**.

**Process of care measures.** *Table 8-4* reports covariate-adjusted differences in several process measures that indicate quality of care across the MAPCP Demonstration and two comparison groups: PCMHs and non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures that address whether beneficiaries received all four of the recommended actions in diabetes care or none of the quality actions, respectively. The last indicator, on whether a beneficiary received a total lipid panel, follows the care guidance for patients with ischemic vascular disease (IVD).

We examine the probability of receiving the recommended services. These dichotomous (yes/no) indicators are modeled using logistic regression models. Estimates in *Table 8-4* are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. Demonstration beneficiaries are expected to have more positive values for all indicators, except the “none” indicator in diabetes care.

**Table 8-4**  
**Maine: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 7,755)	1.75	[-0.60, 4.11]	1.96	[-0.99, 4.91]
Year Two (N = 2,665)	0.67	[-4.18, 5.53]	0.80	[-2.80, 4.40]
Overall (N = 7,941)	1.48	[-0.97, 3.92]	1.66	[-1.29, 4.62]
Retinal eye examination				
Year One (N = 7,755)	-0.64	[-3.08, 1.79]	1.83	[-0.96, 4.62]
Year Two (N = 2,665)	-5.95*	[-10.08, -1.83]	2.78	[-2.84, 8.39]
Overall (N = 7,941)	-2.00*	[-3.67, -0.34]	2.07	[-0.78, 4.92]
LDL-C screening				
Year One (N = 7,755)	-0.82	[-5.86, 4.23]	0.31	[-2.69, 3.32]
Year Two (N = 2,665)	-0.15	[-5.11, 4.81]	1.93	[-1.81, 5.67]
Overall (N = 7,941)	-0.65	[-4.77, 3.48]	0.73	[-2.16, 3.61]
Medical attention for nephropathy				
Year One (N = 7,755)	-4.55*	[-7.99, -1.12]	-0.27	[-3.55, 3.01]
Year Two (N = 2,665)	2.92	[-6.31, 12.14]	0.35	[-3.89, 4.59]
Overall (N = 7,941)	-2.64	[-6.86, 1.58]	-0.11	[-3.09, 2.86]
Received all 4 diabetes tests				
Year One (N = 7,755)	-1.51	[-5.26, 2.24]	1.19	[-1.79, 4.17]
Year Two (N = 2,665)	-2.40	[-8.41, 3.61]	-0.56	[-5.73, 4.61]
Overall (N = 7,941)	-1.74	[-4.26, 0.78]	0.74	[-2.14, 3.63]
Received none of the 4 diabetes tests				
Year One (N = 7,755)	-0.03	[-1.23, 1.18]	-0.39	[-1.48, 0.69]
Year Two (N = 2,665)	-0.18	[-2.30, 1.94]	0.87	[-0.20, 1.94]
Overall (N = 7,941)	-0.06	[-1.40, 1.27]	-0.07	[-1.06, 0.92]
Total lipid panel				
Year One (N = 11,082)	0.28	[-3.75, 4.30]	-1.33	[-3.56, 0.91]
Year Two (N = 4,124)	-1.92	[-5.58, 1.75]	1.04	[-3.29, 5.37]
Overall (N = 11,792)	-0.31	[-3.69, 3.07]	-0.69	[-3.00, 1.61]

**NOTES:**

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH Pilot is associated with a decrease in the likelihood that demonstration beneficiaries received a **retinal eye examination** by 2.00 percentage points.

**Preventable hospitalization measures.** Aside from studying processes of care, largely based on evidence-based guidelines, we also evaluated patient outcomes among Maine PCMH Pilot and comparison practices. Some patient medical events, such as those measured with Prevention Quality Indicators (PQIs), could be preventable with adequate access to high-quality primary care services. We defined avoidable catastrophic events as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, COPD or asthma in older adults, asthma in younger adults, hypertension, and congestive heart failure. The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 8-5** below reports covariate-adjusted differences in these patient outcome measures.

We examine differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters in **Table 8-5**. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improvements in the quality and access to ambulatory care, we expect demonstration beneficiaries to have a reduction (i.e., a significant negative value) in the rate of these avoidable hospitalizations.

**Table 8-5**  
**Maine: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 21,547)	0.10	[-0.80, 0.99]	0.16	[-0.64, 0.95]
Year Two (N = 49,727)	0.23	[-1.03, 1.49]	0.72	[-0.13, 1.57]
Overall (N = 52,468)	0.19	[-0.89, 1.27]	0.55	[-0.14, 1.24]
PQI admissions—overall <sup>2</sup>				
Year One (N = 21,547)	0.36	[-0.46, 1.18]	0.62	[-0.70, 1.94]
Year Two (N = 49,727)	0.59	[-0.57, 1.75]	0.15	[-1.37, 1.67]
Overall (N = 52,468)	0.52	[-0.42, 1.47]	0.29	[-0.97, 1.56]
PQI admissions—acute <sup>3</sup>				
Year One (N = 21,547)	-0.26	[-0.88, 0.35]	-0.41	[-1.07, 0.24]
Year Two (N = 49,727)	-0.04	[-0.66, 0.59]	-0.48	[-1.63, 0.67]
Overall (N = 52,468)	-0.10	[-0.55, 0.34]	-0.46	[-1.37, 0.45]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 21,547)	0.64	[-0.12, 1.40]	1.02	[-0.25, 2.29]
Year Two (N = 49,727)	0.65	[-0.09, 1.39]	0.66	[-0.39, 1.70]
Overall (N = 52,468)	0.65	[-0.04, 1.34]	0.77	[-0.28, 1.81]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, there were no statistically significant *overall* estimates indicating that the Maine PCMH Pilot is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, there were no statistically significant *overall* estimates indicating that the Maine PCMH Pilot is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.

### 8.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes

The metrics for the quantitative analyses discussed above relied on Medicare administrative claims data. Overall, there were no statistically significant findings for the quality indicators when comparing Maine PCMH Pilot practices to the comparison groups. Practices consistently discussed their efforts to identify and work with patients in managing their diabetes. They described the increased emphasis placed on preventive care and the use of EHRs to build condition-specific patient registries and identify gaps in care, particularly among beneficiaries with chronic conditions like diabetes, as part of efforts to improve quality of care. This focus, however, did not carry over to the diabetes related measures, which did not show statistically significant differences among beneficiaries assigned to Maine PCMH Pilot and comparison practices. One exception was the retinal eye exam, which showed a decrease in the likelihood of PCMH beneficiaries receiving the exam compared to beneficiaries in the PCMH comparison group. There also was no evidence of statistically significant overall improvements in the rates of potentially avoidable catastrophic events or PQI admissions among PCMH Pilot beneficiaries compared to the comparison groups. While practices made structural changes to improve processes of care leading to improved health outcomes, 2 years possibly was an insufficient amount of time to see the expected impact in the data.

## 8.4 Access to Care and Coordination of Care

### 8.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two

At the Year One site visit, practices focused on enhancing beneficiary access to care and coordination of care, and they spoke of a variety of initiatives. Open access scheduling, expanding office hours, ensuring that same-day appointments were available, tracking to the third-next-available appointment, increasing the percentage of time that patients saw the same provider, and ensuring that phones were answered during lunch hours were described as efforts to enhance access. Clarifying staff roles and working with CCTs on complex, high-risk, high-cost patients were described as the focus for improving care coordination.

During the Year Two visit, practices spoke of the same initiatives and their continuing progress in integrating them within their practices. One practice talked about sharing personnel between two sites to ensure 24/7 access to care, while another practice used an urgent care center (with which they share their EHR) to extend hours on weekends. Several practices discussed adding resources that were not affordable before their participation in the Maine PCMH Pilot, such as an embedded psychiatric nurse practitioner, behavioral health services, podiatry, a pharmacist, and laboratory services. One practice hired a part-time pharmacist, who, together

with a licensed clinical social worker in the practice, developed a group for some patients with high rates of hospital admission and ER visits.

Additionally, in complying with the requirement to achieve and maintain NCQA PPC® PCMH™ recognition, practices demonstrated continued emphasis on and compliance with the NCQA “must-pass” elements regarding access during and after office hours, implementing a care management program, and tracking referrals and follow-up.

During the first site visit, practices mentioned that they had examined and clarified staff roles to improve care coordination; this continued in the second year. Practices discussed augmenting their in-house care coordination capabilities by establishing internal care teams and assigning specific staff to ensure that ordered consultations and laboratory tests had been done and to follow up with patients recently hospitalized or seen in the ER. Several practices talked about newly integrating care managers to identify high-risk or high-care-utilizing patients and to coordinate those patients’ care with their assigned CCT. One practice spoke of dedicating more time to care management and creating a proactive management process for patients’ chronic health conditions, specifically related to diabetes monitoring and education. Many practices used the EHR to create disease-specific registries (e.g., diabetes, asthma) and analyze the information to identify patients with gaps in care. Providers then made concerted efforts to address gaps while a patient was in the office or before a patient visit. Some also called patients and asked them to come in specifically to receive the identified services. Anecdotally, several practices reported reduced ER and inpatient use among their patients, and several state officials and Maine PCMH Pilot conveners reported hearing about reduced hospital admission and readmission rates.

Participating practices were expected to meet the Core Expectation of integrating behavioral and physical health as a means of enhancing care coordination. Practices discussed the progress made in integrating behavioral health this year. One practice said that, before participating in the Maine PCMH Pilot, this integration was not even on their radar, but they since had colocated behavioral health services within the practice. Practices that found it difficult to identify and develop working relationships with local behavioral health resources were able to avail themselves of technical assistance contracted by the Quality Forum on their behalf. This technical assistance provided focused help in addressing behavioral health integration, including connecting practices with community-based support services for patients with behavioral health problems.

CCTs provided support for the most complex, high-risk, high-need, and high-cost patients served by participating practices. The impacts over the last 12 months described during the 2013 site visit were largely anecdotal. A state official said, “We do have stories of how the structure of primary care and the CCT has improved the lives of complex patients; improved quality of life, improved behavioral health management of patients, particularly by linking them to community resources that were able to meet gaps that practices had not previously addressed.” In Year Two, practices discussed how the CCTs enhanced the level of care their practice provided. Staff from one CCT said, “One of the differences that makes complex care management different is that if these patients were easily linked, they wouldn’t be high-risk patients. We don’t just make a referral; we make sure there’s a firmly established connection before we step out.”

#### 8.4.2 Changes in Access to Care and Coordination of Care

Our evaluation of the MAPCP Demonstration and access to and coordination of care addresses whether the Maine PCMH Pilot was associated with changes in the utilization of primary care services and specialist services, and with better or enhanced coordination of care for Medicare beneficiaries. **Table 8-6** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across Maine PCMH Pilot practices and two comparison groups: PCMHs and non-PCMHs. The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 8.4.3**.

The first four measures address utilization of primary care and specialist services. Demonstration beneficiaries are expected to increase their utilization of primary care services and decrease utilization of specialist services relative to comparison group beneficiaries after the start of the MAPCP Demonstration. We look at the quarterly rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall visit rate, for example, if the demonstration is associated with reductions in both primary care and specialist visit rates, we also analyzed the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. Having a higher percentage indicates greater use of primary care services relative to specialist services. Demonstration beneficiaries are expected to have higher primary care visit percentages.

We analyzed two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. The Maine PCMH Pilot is expected to increase the follow-up visit rate and reduce the unplanned readmission rate.

Finally, we assessed continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plan. The value of the continuity of care index, measured annually, ranges from 0 to 1. Maine PCMH Pilot beneficiaries are expected to have higher values on the continuity of care index.

With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first)

quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile.

**Table 8-6**  
**Maine: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 21,547)	-30.73	[-107.46, 45.99]	31.07	[-19.17, 81.31]
Year Two (N = 49,727)	42.77	[-41.69, 127.23]	67.98*	[10.60, 125.36]
Overall (N = 52,468)	20.70	[-58.07, 99.47]	56.90*	[4.75, 109.04]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 21,547)	9.23	[-18.96, 37.42]	-7.85	[-38.02, 22.31]
Year Two (N = 49,727)	-11.18	[-53.02, 30.67]	-26.08	[-66.13, 13.97]
Overall (N = 52,468)	-5.05	[-41.29, 31.19]	-20.61	[-56.10, 14.89]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 21,547)	3.64	[-4.83, 12.11]	6.74	[-4.72, 18.19]
Year Two (N = 49,727)	-2.55	[-11.24, 6.14]	12.08*	[1.18, 22.98]
Overall (N = 52,468)	-0.69	[-8.42, 7.04]	10.47*	[0.05, 20.90]
Primary care visits as percentage of total visits (higher quintile = larger percentage)				
Year One (N = 30,603)				
1st quintile	-2.57	[-6.67, 1.52]	-1.87	[-4.76, 1.03]
5th quintile	1.24	[-0.69, 3.17]	0.90	[-0.45, 2.25]
Year Two (N = 14,454)				
1st quintile	0.46	[-3.28, 4.20]	-1.60	[-5.11, 1.92]
5th quintile	-0.24	[-2.23, 1.75]	0.77	[-0.90, 2.44]
Overall (N = 32,918)				
1st quintile	-1.75	[-5.54, 2.04]	-1.79	[-4.76, 1.17]
5th quintile	0.84	[-1.00, 2.67]	0.86	[-0.53, 2.26]

(continued)

**Table 8-6 (continued)**  
**Maine: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 2,673)	130.85*	[36.37, 225.32]	37.45	[-39.23, 114.12]
Year Two (N = 6,244)	44.31	[-31.23, 119.84]	-12.31	[-109.32, 84.71]
Overall (N = 8,149)	70.27	[-8.25, 148.79]	2.62	[-83.41, 88.65]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 3,346)	-23.91*	[-46.96, -0.85]	9.16	[-14.12, 32.45]
Year Two (N = 7,726)	-10.78	[-31.31, 9.75]	5.58	[-31.96, 43.12]
Overall (N = 10,028)	-14.74	[-33.10, 3.63]	6.66	[-23.32, 36.65]
Continuity of care index (higher quintile = better continuity of care)				
Year One (N = 45,277)				
1st quintile	-2.96*	[-5.88, -0.05]	-0.50	[-3.38, 2.38]
5th quintile	1.30*	[0.10, 2.49]	0.28	[-1.29, 1.84]
Year Two (N = 22,437)				
1st quintile	-4.74*	[-9.07, -0.41]	-3.04	[-7.79, 1.71]
5th quintile	1.62*	[0.16, 3.08]	1.27	[-0.65, 3.19]
Overall (N = 46,530)				
1st quintile	-3.47*	[-6.16, -0.77]	-1.22	[-4.36, 1.92]
5th quintile	1.39*	[0.33, 2.45]	0.56	[-0.99, 2.10]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH Pilot is associated with an increase in the rate of **primary care visits** among demonstration beneficiaries by 56.90 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH Pilot is associated with an increase in the rate of **surgical specialist visits** among demonstration beneficiaries by 10.47 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH Pilot is associated with an increase in continuity of care, as measured by concentration of visits. Specifically, the Maine PCMH Pilot is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers.

#### **8.4.3 Discussion of Access to Care and Coordination of Care**

Based on site visit interviews, we expected Maine PCMH Pilot beneficiaries to have increased primary care visits and higher continuity of care index values, reflecting greater concentration of visits in their medical home. While there was an overall increase in the rate of primary care visits among PCMH Pilot beneficiaries relative to non-PCMH practices, changes in the continuity of care index were more complex. Beneficiaries in the Maine PCMH Pilot had a higher continuity of care index compared to beneficiaries in the PCMH comparison practices in Year Two, but this was not found in comparison with the non-PCMH comparison practices. The site visit interviews did not provide an explanation for this inconsistency. We did not find that beneficiaries in the PCMH Pilot had reduced changes in the rate of 30-day unplanned readmissions compared to PCMH or non-PCMH comparison practices, which would have been consistent and expected with the focus on high-risk patients and anecdotal evidence we heard during site visit interviews. Altering patterns of care take time, so these findings will be monitored in Year Three to assess whether additional time is needed to see a significant change.

### **8.5 Beneficiary Experience with Care**

#### **8.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

Over the last year, the Maine PCMH Pilot continued to be associated with improvements in patient experience by building trust between health care providers and patients. Core Expectations related to beneficiaries' experience stressed delivering care that was safe, timely, effective, equitable, efficient, and patient centered. The Maine PCMH Pilot aimed at opening up lines of communication between health care providers and patients by establishing patient

advisory councils at each practice. A state official explained that they cultivated an environment that included patient advisors and advisory groups, making sure that the consumer had a seat at the policy table. Many medical home physicians, practice staff, and state officials offered positive feedback on the effectiveness of these councils. A patient advisory coordinator said their group brings in the consumers' point of view on ways to improve patient satisfaction and health by discussing patient education, health self-management, medication adherence, and communication during physician visits. The patient advisory coordinator felt that increased communication during office visits was the most important element of the Maine PCMH Pilot, specifically, letting patients know that it was okay to ask questions. A consumer advocate commented that the mere fact that consumers were at the policy table was a success in itself. She said that this is the first time the consumer had a voice and believed that this would continue indefinitely. One provider noted that communication had improved, and this profoundly affected their practice.

Practices also improved their communication with patients on both ends of office appointments. One practice said that they implemented a previsit process for patients with chronic conditions to ensure that the patient had laboratory tests done before the visit and to discuss expectations and goals for the visit. Some physicians said that they began creating and distributing clinical summaries after each visit. These summaries included an overview of the visit, vital signs, a medication list (highlighting new medications), future appointment dates, referrals made during the visit, physician and nurse notes, and instructions. One provider said that this was the most significant change in their practice and that it helped create a mutual understanding between patients and providers. Practices also used patient portals to enhance the consumer experience. In addition to providing information on office visits, the portals often had appointment schedulers and direct messaging capabilities.

Over the course of the year, practices made changes to become more patient centered. There was a continued effort to increase patient engagement, chronic disease self-management, nurse care management services, ER discharge follow-up, identification of care gaps, and shared decision making. Practices and health networks offered additional complementary services outside the physician's office. More self-management programs and events were offered to patients at no additional cost. These programs focused on chronic conditions such as diabetes, asthma, and chronic pain. Nurse care managers also worked directly with patients to identify care gaps and help with shared decision making. The Maine PCMH Pilot still emphasized including family, friends, and other support people in patients' care.

Practices tracked patient experiences through different surveys. In the spring of 2012, Maine Quality Forum fielded a voluntary patient experience survey for practices participating in the Maine PCMH Pilot. Hospital groups operating in Maine also administered ongoing patient surveys for practices within their network. These surveys helped providers identify strengths and weaknesses in the practice and allowed them to improve patient experience. One physician said that they received very positive results from their surveys, but found room for improvement in communication, turnaround time for lab results, and office wait times. Another practice saw that they scored low on the question "Did the provider listen carefully to you?" Once weaknesses were identified, practices worked on improvement. For example, one provider who was part of the practice scoring low in the "listening carefully" category said that the practice had set up a time with all physicians to talk about how they could improve communication with patients.

One consumer representative interviewed during the site visit voiced concern about closure of the CCTs if MAPCP Demonstration funds were withdrawn. They believed that the real patient engagement is occurring in the CCTs and, without continued federal funding, this aspect of the Maine PCMH Pilot would cease to exist. The consumer representative explained, “Now that the money is going away, I’m concerned that consumer engagement piece is going to die in its tracks. I wish there was some way to ensure that it’s not going to end.”

### **8.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between the Maine PCMH Pilot and changes in beneficiary experience with care are not yet available. In the final report, we plan to report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

## **8.6 Effectiveness (Utilization & Expenditures)**

### **8.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures During Year Two**

At the Year One site visit, practices spoke at length of practice transformation anchored in the Core Expectations. Several Core Expectations have the potential to affect utilization and expenditures directly, including practice-integrated care management; behavioral and physical health integration; enhanced access to care; population risk stratification and management of patients at risk for adverse outcomes; and commitment to reducing unnecessary health care spending, reducing waste, and improving cost-effective use of health services. Practices and state officials also spoke about the integration of the CCTs within practices and expectations for their ability to target high utilizers of care correctly and to work with these patients successfully to reduce utilization. In general, initiatives were implemented without regard to the patient’s type of health insurance coverage. There were no features specifically targeting Medicare or Medicaid beneficiaries, but to the extent that these beneficiaries were in poorer health or more frequent utilizers of acute and emergency care services, practices expected significant changes in utilization as a result of medical home activities.

Through implementation of these initiatives, Maine expects to achieve budget neutrality for the MAPCP Demonstration through a 6 percent and 7 percent reduction in hospitalization for respiratory and cardiovascular illness, respectively, and 5 percent reductions in ER use, specialist visits, standard imaging, advanced imaging, and ultrasound imaging. With these reductions over the course of the MAPCP Demonstration, Maine projects gross savings to Medicare of an estimated \$10.13 per beneficiary per month (PBPM) or \$0.23 net of \$9.90 in monthly per beneficiary payments to practices and CCTs.

The Core Expectations continued to form the foundation upon which activities were implemented over the past year, particularly for expansion practices that spent 2013 ramping up medical home activities. In the second round of site interviews, the initial Maine PCMH Pilot practices did not report new initiatives implemented over the past year. Instead, several practices spoke of their continued efforts to improve care management of patients recently discharged from the hospital or ER, their addition of new care team staff, and their continued work with the CCTs to identify and work with high utilizers. CCT and practice interviewees also discussed at length the systematic use of data to identify patients in need of care management or evidence-

based care and to monitor utilization within patient panels, as discussed in more detail in **Section 8.2.1**.

### **8.6.2 Changes in Utilization and Expenditures**

**Tables 8-7** and **8-8** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between the Maine PCMH Pilot and two comparison groups: PCMHs and non-PCMHs. **Table 8-7** shows measures of total expenditures, as well as specific categories of expenditures that are expected to be affected by the Maine PCMH Pilot. Estimates in this table are interpreted as the difference in the rate of growth PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. The Maine PCMH Pilot is expected to reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether the Maine PCMH Pilot is associated with the intended utilization changes in these care categories, we observe acute-care, post-acute-care, ER, specialty physician, and imaging expenditures. We also analyze changes in all-cause admissions and all-cause ER visits measured as rates per 1,000 beneficiary quarters. **Table 8-8** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.

The Maine PCMH Pilot also is expected to result in higher utilization of certain types of services. In particular, we expect that the demonstration will be associated with an increase in the utilization of primary care, home-based care, and outpatient services (including care received at hospital outpatient departments, FQHCs, and RHCs). These services are captured in our measures of primary care physician expenditures, home health expenditures, and outpatient expenditures. Positive regression coefficients indicate that the Maine PCMH Pilot is associated with an expected increase in the use of these services.

As described above, the Maine PCMH Pilot is expected to decrease the use of some services, while increasing the use of others. Overall, however, the MAPCP Demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyze the average overall Medicare PBPM expenditures and look for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 8.6.4**.

**Table 8-7**  
**Maine: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 21,547)	30.08	[-28.39, 88.56]	-13.60	[-57.88, 30.67]
Year Two (N = 49,727)	49.66	[-13.57, 112.89]	43.69	[-5.65, 93.02]
Overall (N = 52,468)	43.78	[-15.29, 102.86]	26.49	[-16.93, 69.90]
Acute-care				
Year One (N = 21,547)	8.80	[-16.27, 33.88]	-13.78	[-37.11, 9.54]
Year Two (N = 49,727)	18.37	[-7.61, 44.36]	25.05*	[0.29, 49.82]
Overall (N = 52,468)	15.50	[-8.45, 39.45]	13.39	[-9.03, 35.81]
Post-acute-care				
Year One (N = 21,547)	14.09	[-9.88, 38.05]	3.87	[-12.53, 20.27]
Year Two (N = 49,727)	21.63	[-2.50, 45.76]	5.49	[-4.60, 15.58]
Overall (N = 52,468)	19.36	[-3.50, 42.22]	5.00	[-5.12, 15.13]
ER visits not leading to hospitalization				
Year One (N = 21,547)	-0.72	[-4.03, 2.59]	-4.70	[-9.74, 0.33]
Year Two (N = 49,727)	-1.82	[-5.26, 1.61]	-2.91	[-7.34, 1.53]
Overall (N = 52,468)	-1.49	[-4.70, 1.71]	-3.45	[-7.86, 0.97]
Outpatient				
Year One (N = 21,547)	11.99*	[2.43, 21.56]	6.35	[-2.98, 15.68]
Year Two (N = 49,727)	7.70	[-2.23, 17.64]	2.45	[-9.64, 14.54]
Overall (N = 52,468)	8.99	[-0.11, 18.09]	3.62	[-6.65, 13.89]
Specialty physician				
Year One (N = 21,547)	-3.34	[-9.29, 2.61]	-0.99	[-6.81, 4.84]
Year Two (N = 49,727)	-4.03	[-10.53, 2.47]	4.66*	[0.23, 9.09]
Overall (N = 52,468)	-3.82	[-9.85, 2.20]	2.97	[-1.53, 7.46]
Primary care physician				
Year One (N = 21,547)	0.05	[-1.79, 1.89]	-1.93	[-4.38, 0.52]
Year Two (N = 49,727)	1.33	[-0.49, 3.15]	-0.02	[-2.50, 2.45]
Overall (N = 52,468)	0.95	[-0.70, 2.59]	-0.59	[-2.93, 1.74]
Home health				
Year One (N = 21,547)	-0.57	[-4.65, 3.51]	0.91	[-2.94, 4.76]
Year Two (N = 49,727)	2.93	[-0.33, 6.19]	4.30*	[0.10, 8.51]
Overall (N = 52,468)	1.88	[-1.39, 5.14]	3.29	[-0.40, 6.97]
Other non-facility				
Year One (N = 21,547)	-2.15	[-4.52, 0.22]	-0.76	[-3.03, 1.51]
Year Two (N = 49,727)	-2.74	[-6.12, 0.64]	-0.57	[-2.52, 1.38]
Overall (N = 52,468)	-2.56	[-5.30, 0.17]	-0.63	[-2.31, 1.06]

(continued)

**Table 8-7 (continued)**  
**Maine: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Laboratory				
Year One (N = 21,547)	-0.59	[-2.00, 0.83]	0.52	[-0.87, 1.90]
Year Two (N = 49,727)	-0.18	[-1.32, 0.97]	-0.54	[-1.93, 0.86]
Overall (N = 52,468)	-0.30	[-1.32, 0.72]	-0.22	[-1.46, 1.02]
Imaging				
Year One (N = 21,547)	-0.05	[-1.43, 1.33]	0.14	[-0.53, 0.80]
Year Two (N = 49,727)	0.13	[-1.93, 2.19]	-0.60*	[-1.17, -0.03]
Overall (N = 52,468)	0.07	[-1.60, 1.75]	-0.38	[-0.92, 0.16]
Other facility				
Year One (N = 21,547)	0.35	[-0.64, 1.34]	0.20	[-0.34, 0.75]
Year Two (N = 49,727)	-0.35	[-1.07, 0.36]	0.22	[-0.35, 0.79]
Overall (N = 52,468)	-0.14	[-0.75, 0.47]	0.22	[-0.35, 0.78]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There is no statistically significant difference in the *overall* growth of **total Medicare expenditures** among beneficiaries in Maine PCMH Pilot practices relative to beneficiaries in both PCMH practices and non-PCMH practices.
- Relative to beneficiaries in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards faster growth in **acute-care expenditures** among beneficiaries in Maine PCMH Pilot practices, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries in non-PCMH practices, positive estimates in Year Two suggests potential trends towards faster growth in **specialty physician expenditures** and **home health expenditures** among beneficiaries in Maine PCMH Pilot practices, though the *overall* estimates are not statistically significant.

- Relative to beneficiaries in non-PCMH practices, positive estimates in Year Two suggests potential trends towards slower growth in **imaging expenditures** among beneficiaries in Maine PCMH Pilot practices, though the *overall* estimates are not statistically significant.

**Table 8-8**  
**Maine: Comparison of average change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 21,547)	-0.61	[-4.71, 3.48]	1.30	[-2.68, 5.28]
Year Two (N = 49,727)	1.94	[-3.68, 7.56]	4.76	[-0.03, 9.55]
Overall (N = 52,468)	1.17	[-3.60, 5.95]	3.72	[-0.39, 7.83]
ER visits not leading to hospitalization				
Year One (N = 21,547)	-8.12	[-17.16, 0.93]	-9.76	[-22.69, 3.17]
Year Two (N = 49,727)	-14.38*	[-25.31, -3.45]	-10.31	[-22.08, 1.47]
Overall (N = 52,468)	-12.50*	[-22.23, -2.77]	-10.14	[-21.86, 1.58]

**NOTES:**

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH Pilot is associated with a decrease in the rate of **ER visits not leading to a hospitalization** among demonstration beneficiaries by 12.50 per 1,000 beneficiary quarters.

### 8.6.3 Medicare Budget Neutrality in Year Two of the Maine PCMH Pilot

#### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention, absent any fees paid on behalf of Medicare. Estimates of gross savings for Maine through Year Two of the demonstration are based on the sum of eight quarter-specific cost regression coefficients comparing beneficiaries attributed to demonstration practices to

beneficiaries attributed to PCMH comparison practices. Negative cost estimates denote savings, as the growth in MAPCP Demonstration costs was smaller than in the comparison group. Positive cost estimates denote losses, as the growth in MAPCP Demonstration costs exceeded that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares with the beneficiary-quarter as the unit of analysis.

### **MAPCP Demonstration Fees**

In the MAPCP Demonstration, CMS paid monthly medical home fees of a total \$9.90 PMPM to Maine PCMH Pilot practices for Medicare-assigned demonstration beneficiaries and CCTs. Fees represented those actually paid out, and there was no imputation for practices choosing not to bill for care management under the demonstration.

Total monthly fees paid by Medicare were aggregated to the quarter level from claims submitted on behalf of the practices and other participating organizations. Budget neutrality, or net savings, was determined on a yearly (or multiple-year) basis by subtracting all paid fees during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality were slightly lower than the actual fees paid. This is because the savings regression model excluded beneficiaries who were eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees calculated excluding beneficiaries with fewer than 3 months of demonstration eligibility.

### **Statistical Tests of Budget Neutrality**

This regression methodology allows for statistical tests of confidence that CMS and the states can place in any estimated savings. Three tests are conducted in the analysis.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration intervention associated with a lower level of costs in one or more demonstration quarters during the first 2 years?*
2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings had to be positive, implying systematically lower demonstration expenditures relative to the PCMH comparison group and controlling for beneficiary and practice characteristics.
3. The third test requires that total gross savings exceed total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid out?*

## **Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures**

In addition to statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration into perspective. The first measure is the return on investment (RoI) of fees, the ratio of total gross savings to total fees paid by the MAPCP Demonstration. RoI answer the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implied budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among demonstration beneficiaries in the absence of the demonstration. This unobservable outcome is estimated by taking average Medicare expenditures observed in the comparison group and multiplying them by the number of demonstration beneficiaries. Viewing the total gross savings in the context of this number answers the question: What was Medicare's savings as a percentage of all expenditures? The validity of the interpretation of both of these ratios, however, relies on the statistical significance of the estimate of total gross savings.

*Tables 8-9a–c* report the estimated gross and net savings for Maine during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 8-9a**  
**Maine: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	\$32.68	\$37.20	\$190.41	\$100.36	\$90.25
Eligible beneficiary quarters (B)	18,537	18,776	18,757	18,262	74,333
Total gross savings (C = -A*B)	-\$605,753	-\$698,500	-\$3,571,616	-\$1,832,852	-\$6,708,721
Total MAPCP Demonstration fees (D)	\$542,223	\$549,000	\$556,427	\$542,974	\$2,190,624
Net savings (E = C-D)	-\$1,147,976	-\$1,247,500	-\$4,128,043	-\$2,375,826	-\$8,899,345
Average expenditures (PCMH CG) (F)	\$2,285	\$2,371	\$2,200	\$2,148	\$2,252
Total expenditures (PCMH CG) (G = F*B)	\$42,357,045	\$44,517,896	\$41,265,400	\$39,226,776	\$167,367,117
Average expenditures (MAPCP Demonstration) (H)	\$2,107	\$2,253	\$2,337	\$2,379	\$2,269
Total expenditures (MAPCP Demonstration) (I = H*B)	\$39,057,459	\$42,302,328	\$43,835,109	\$43,445,298	\$168,640,194

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 8-9b**  
**Maine: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	2013: Q3 (Jul–Sept)	2013: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	\$97.50	\$161.90	\$165.53*	\$168.09	\$148.99
Eligible beneficiary quarters (B)	41,512	42,961	44,053	44,706	173,232
Total gross savings (C = -A*B)	-\$4,047,502	-\$6,955,227	-\$7,292,028	-\$7,514,605	-\$25,809,362
Total MAPCP Demonstration fees (D)	\$1,220,446	\$1,247,543	\$1,281,373	\$1,298,628	\$5,047,989
Net savings (E = C-D)	-\$5,267,948	-\$8,202,770	-\$8,573,401	-\$8,813,233	-\$30,857,351
Average expenditures (PCMH CG) (F)	\$2,176	\$2,239	\$2,200	\$2,197	\$2,203
Total expenditures (PCMH CG) (G = F*B)	\$90,330,112	\$96,189,679	\$96,916,600	\$98,219,082	\$381,655,473
Average expenditures (MAPCP Demonstration) (H)	\$2,324	\$2,364	\$2,276	\$2,323	\$2,321
Total expenditures (MAPCP Demonstration) (I = H*B)	\$96,473,888	\$101,559,804	\$100,264,628	\$103,852,038	\$402,150,358

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 8-9c**  
**Maine: Estimates of gross savings, fees paid, and net savings, all years**

	Year One and Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	\$131.35	-\$45.88	\$308.59
Eligible beneficiary quarters (B)	247,558	—	—
Eligible beneficiaries overall	52,468	—	—
Total gross savings (C = -A*B)	-\$32,518,083	-\$76,395,546	\$11,359,380
Total MAPCP Demonstration fees (D)	7,238,613	—	—
Net savings (E = C-D)	-\$39,756,696	-\$83,634,159	\$4,120,767
Average expenditures (PCMH CG) (F)	\$2,218	—	—
Total expenditures (PCMH CG) (G = F*B)	\$549,022,590	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,306	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$570,790,552	—	—
Return on fees (J = C/D)	-4.49	—	—
Gross savings per comparison expenditures (K = C/G)	-0.059	—	—

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A\*B): Weighted average of the quarterly difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (comp) (F\*B): Average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(J) Return on fees (J = C/D): Total gross savings divided by total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2012:Q1–2013:Q4.

- Estimated differences in Maine PCMH Pilot costs per beneficiary, relative to the comparison group, range from a positive \$190.41 (2012: Quarter 3) to a positive \$32.68 (2012: Quarter 1) [*Tables 8-9a–b*]. While estimates in all quarters were

positive, they were statistically insignificant in all but the seventh quarter (2013: Quarter 3).

- Estimated total gross savings to Medicare was a negative \$32,518,083 [**Table 8-9c: C**]. The loss was not statistically significant. The confidence interval (2-sided; 90% level) ranged between \$76 million in losses to \$11 million in savings. Net savings were estimated at negative \$39,756,696, but similarly were not statistically significant.
- The \$33 million loss estimate represents 5.9 percent of the estimated \$549 million in comparison group costs weighted by Maine PCMH Pilot eligible beneficiaries [**Table 8-9c: K**]. The width of the confidence interval for total gross savings, however, indicated that the loss to date could not be considered statistically different from zero.
- Total fees paid based on Maine PCMH Pilot eligible quarters were \$7,238,571 [**Table 8-11c: D**], or \$9.75 per eligible month.<sup>4</sup> This was consistent with the combined PBPM fee of \$6.95 to practices and \$2.95 to CCTs paid by Medicare before adjusting for sequestration. The fees averaged about 1.3 percent of total Medicare expenditures for health services by Maine PCMH Pilot eligible beneficiaries during the demonstration's first 2 years [**Table 8-9c: I**].
- This translated into a Medicare RoI of fees of -4.49 (-\$32,518,083/\$7,238,571), though the confidence interval around the total gross savings estimate did not indicate statistical significance.

#### 8.6.4 Discussion of Effectiveness

The Core Expectations for practices participating in the Maine PCMH Pilot were the foundation for implementing practice transformation efforts to reduce unnecessary utilization and expenditures. A strong focus on care management, particularly after discharge from the hospital or ER, the use of medical record data to identify gaps in needed care, and partnering with CCTs to identify and work with high utilizers were employed routinely by practices to affect beneficiaries' use of health care services. During the site visit, many providers and CCT staff shared anecdotal evidence of reduced rates of ER use not leading to hospitalization. Looking at PCMH Pilot beneficiaries in comparison to PCMH practices, we saw an overall estimate indicating a decreased rate of ER visits not leading to hospitalization.

There was no evidence that total Medicare expenditures for beneficiaries assigned to the Maine PCMH Pilot were growing at a slower rate compared with expenditures for beneficiaries assigned to PCMH and non-PCMH comparison practices. Relative to beneficiaries in non-PCMH practices, a positive estimate in Year Two suggested a potential trend towards faster growth in home health expenditures, acute-care expenditures, and specialty physician expenditures. While an increase in home health expenditures was anticipated with the PCMH Pilot, acute-care and specialty expenditures were expected to decrease. Changing patterns of service utilization takes time, so the overall findings regarding utilization and expenditures will

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<sup>4</sup> Fees per eligible month equaled the total fees divided by MAPCP Demonstration eligible months. Eligible months equaled eligible quarters multiplied by three.

be monitored in Year Three to determine if changes associated with practice transformation occur later in the MAPCP Demonstration.

The losses in Maine were estimated to be \$39.7 million over the first 2 years of the demonstration. The results were consistent with the fact that, in all eight quarters of the demonstration period, the Medicare costs per beneficiary were higher among the Maine PCMH Pilot beneficiaries compared to the comparison beneficiaries (though these differences in costs were not significant except for in the last quarter, Quarter 8).

## **8.7 Special Populations**

### **8.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

The Maine PCMH Pilot did not focus specifically on special populations, but targeted patients based on health needs. CCTs focused their efforts on the most complex 5 percent of beneficiaries in each practice's panel of patients. These beneficiaries were identified as being high-cost and high utilizers of health care services, with a significant number of patients who were dually eligible for Medicare and Medicaid. The state developed a set of criteria to help CCTs and practices identify these high-cost, high-utilizers within a practice.

One state official discussed the state's commitment to improving the health outcomes of beneficiaries with mental health problems. She explained that, over the past year, Maine expanded behavioral health resources in its work toward integrating physical and behavioral health services. Building on the Maine PCMH Pilot and the Health Homes initiative, MaineCare implemented behavioral health home organizations (BHHO), starting in April 2014. BHHOs served a function similar to that of CCTs in providing more integrated and better coordinated care, only they focused specifically on MaineCare practice members with serious mental illness and children with serious emotional disturbance.

An executive for one of the Area Agencies on Aging highlighted the need for expanded mental health services, explaining that the dementia population poses the biggest challenge to the state's health system. He said that roughly 38,000 people in the state suffered from dementia, and these were some of the most challenging and costly patients to work with. They had longer average hospital stays and usually ended up in long-term care or utilizing skilled nursing services. A consumer advocate said that patients suffering from dementia were "frequent flyers" at hospitals, and that this population had no support systems in place. Through enhanced mental health services, such as the BHHOs, the state was anticipating a positive impact on this population.

A series of tools and articles were provided on the Quality Counts Web site, including toolkits related to services for special populations, such as mental health and substance abuse interagency collaboration. In addition, webinars provided during the year through Quality Counts reflected the state's support for participating practices' care of special populations. Topics covered included "Maine's Behavioral Health Home Initiative," "Meeting the Triple Aim Needs of Older Patients," "Brief Screening Intervention Treatment Options for Substance Abuse," and "Care of Pregnant Women and Perinatal Substance Abuse."

### 8.7.2 Changes Experienced by Special Populations

In all states, we provide quantitative analysis of the association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries. These special populations include beneficiaries with specific conditions that could lead to higher utilization of health care (beneficiaries with multiple chronic conditions, behavioral health conditions, or disabilities) or those who potentially experience disparities in access to and quality of health care (beneficiaries who are dually eligible for Medicare and Medicaid, live in rural areas, or belong to racial/ethnic minorities).

**Table 8-10** reports covariate-adjusted differences in total Medicare spending PBPM across the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for all six special populations. Estimates in **Table 8-10** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to faster growth.

**Tables 8-11** through **8-15** show the changes associated with the MAPCP Demonstration for beneficiaries with multiple chronic conditions. Care management might be expected to have a greater impact on outcomes for this population than for the Medicare population in general, and, for this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population in all states.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in two consecutive years of Medicare claims. To identify chronic conditions, we used the Chronic Condition Indicator algorithm, developed by the Agency for Healthcare Research and Quality (AHRQ) as part of the Healthcare Cost and Utilization Project (discussed in more detail in Appendix D). The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one lasting 12 months or longer and meeting one or both of the following conditions: (a) limiting a person's ability to care for themselves, live independently, or interact with others; (b) requiring ongoing intervention with medical products, services, and/or special equipment. In addition, beneficiaries also have to be in the CMS-HCC high-risk category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 27 percent of MAPCP Demonstration beneficiaries fit this profile in Maine.

Medicare beneficiaries with behavioral health conditions are another population with greater health needs who potentially could benefit more from care management, relative to the Medicare population in general. This population also has expenditures and utilization directly identifiable as being due to behavioral health conditions. In all states, we report the changes associated with the MAPCP Demonstration on a selection of overall and behavioral health-specific expenditure and utilization outcomes; the results for Maine are in **Table 8-16** and **Table 8-17**.

For the remaining special populations listed above, since the Maine PCMH Pilot was not associated with a statistically significant change in total Medicare expenditures, as reported in **Table 8-10**, we did not provide any additional analyses.

**Table 8-10**  
**Maine: Comparison of average change estimates for total PBPM Medicare expenditures**  
**among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Multiple chronic conditions only				
Year One (N = 5,708)	89.23	[-79.23, 257.69]	-93.99	[-214.89, 26.91]
Year Two (N = 12,968)	158.04	[-64.08, 380.17]	136.77*	[1.87, 271.66]
Overall (N = 13,911)	137.07	[-63.82, 337.96]	66.44	[-51.50, 184.38]
Behavioral health conditions only				
Year One (N = 5,651)	16.21	[-52.21, 84.62]	-27.57	[-130.23, 75.09]
Year Two (N = 11,891)	32.00	[-64.82, 128.81]	49.67	[-30.61, 129.95]
Overall (N = 12,765)	26.94	[-54.11, 108.00]	24.94	[-54.58, 104.47]
Disabled beneficiaries only				
Year One (N = 8,501)	11.74	[-49.85, 73.33]	-42.31	[-118.30, 33.68]
Year Two (N = 19,445)	-7.81	[-74.45, 58.83]	21.85	[-52.42, 96.11]
Overall (N = 20,639)	-1.93	[-63.22, 59.36]	2.56	[-65.51, 70.64]
Dually eligible beneficiaries only				
Year One (N = 10,216)	43.60	[-50.07, 137.27]	-34.35	[-110.48, 41.78]
Year Two (N = 23,569)	65.06	[-20.19, 150.31]	30.09	[-44.78, 104.96]
Overall (N = 24,956)	58.61	[-25.71, 142.94]	10.74	[-56.70, 78.18]
Rural beneficiaries only				
Year One (N = 5,838)	32.32	[-55.39, 120.03]	-41.26	[-113.60, 31.08]
Year Two (N = 18,711)	112.21*	[7.60, 216.82]	35.02	[-19.98, 90.02]
Overall (N = 19,388)	93.28	[-2.28, 188.84]	16.95	[-36.33, 70.22]
Non-White beneficiaries only				
Year One (N = 423)	-20.12	[-157.31, 117.07]	-74.93	[-240.41, 90.55]
Year Two (N = 1,058)	42.83	[-70.32, 155.99]	20.28	[-118.99, 159.56]
Overall (N = 1,129)	25.13	[-75.97, 126.24]	-6.48	[-130.31, 117.34]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards faster growth in total Medicare expenditures among **beneficiaries with multiple chronic conditions** in Maine PCMH Pilot practices, though the *overall* estimate is not statistically significant.
- Relative to rural beneficiaries in PCMH practices, a positive estimate in Year Two suggests a potential trend towards faster growth in total Medicare expenditures among **rural beneficiaries** in Maine PCMH Pilot practices, though the *overall* estimate is not statistically significant.

Although there were no significant associations between the Maine PCMH Pilot and total Medicare expenditures among beneficiaries with multiple chronic conditions in Pilot practices relative to beneficiaries in PCMH or non-PCMH comparison practices, we expected care management to have a greater impact on the outcomes for this population. In the next subsection, we further explore the association between the Maine PCMH Pilot and Medicare beneficiaries with multiple chronic conditions.

### **Beneficiaries with Multiple Chronic Conditions**

Care management potentially could have greater effects on populations with multiple chronic conditions than on the general population. In the next five tables, we consider the association between the MAPCP Demonstration and the subpopulation of beneficiaries with multiple chronic conditions and expenditures among this population. The MAPCP Demonstration group and the PCMH and non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions. Estimates in **Table 8-11** are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. MAPCP Demonstration beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 8-12**. Estimates in **Table 8-12** are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improved access to ambulatory care, we expect demonstration beneficiaries with multiple chronic conditions to have a reduced rate (i.e., a significant negative value) of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 8.3.2**.

**Table 8-11**  
**Maine: Comparison of average change estimates for process of care indicators among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 3,045)	2.40	[-0.98, 5.79]	3.13	[-1.91, 8.18]
Year Two (N = 972)	0.89	[-3.66, 5.45]	1.34	[-6.54, 9.21]
Overall (N = 3,092)	2.04	[-0.86, 4.94]	2.70	[-2.65, 8.05]
Retinal eye examination				
Year One (N = 3,045)	-1.52	[-4.72, 1.68]	4.61*	[0.82, 8.40]
Year Two (N = 972)	-2.12	[-6.89, 2.65]	1.79	[-6.90, 10.49]
Overall (N = 3,092)	-1.66	[-4.09, 0.76]	3.93*	[0.33, 7.53]
LDL-C screening				
Year One (N = 3,045)	0.43	[-10.84, 11.70]	1.67	[-1.59, 4.93]
Year Two (N = 972)	-0.21	[-7.64, 7.22]	4.16	[-1.57, 9.89]
Overall (N = 3,092)	0.27	[-9.26, 9.81]	2.27	[-0.96, 5.49]
Medical attention for nephropathy				
Year One (N = 3,045)	-7.46*	[-11.41, -3.51]	2.09	[-1.45, 5.63]
Year Two (N = 972)	4.15	[-8.51, 16.81]	-0.07	[-4.97, 4.83]
Overall (N = 3,092)	-4.67*	[-9.12, -0.22]	1.57	[-1.76, 4.90]
Received all 4 diabetes tests				
Year One (N = 3,045)	-4.27	[-11.63, 3.08]	3.89*	[0.52, 7.25]
Year Two (N = 972)	-2.71	[-8.96, 3.53]	1.04	[-4.54, 6.62]
Overall (N = 3,092)	-3.90	[-8.73, 0.93]	3.20*	[0.12, 6.29]
Received none of the 4 diabetes tests				
Year One (N = 3,045)	-0.62	[-2.75, 1.50]	-1.47	[-3.81, 0.87]
Year Two (N = 972)	-2.42	[-6.18, 1.35]	1.46	[-0.75, 3.68]
Overall (N = 3,092)	-1.05	[-3.26, 1.16]	-0.77	[-2.82, 1.29]
Total lipid panel				
Year One (N = 5,719)	1.09	[-2.46, 4.64]	-0.02	[-2.63, 2.59]
Year Two (N = 1,851)	1.05	[-3.14, 5.23]	2.62	[-0.97, 6.22]
Overall (N = 5,927)	1.08	[-1.91, 4.07]	0.62	[-1.74, 2.97]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH pilot is associated with an increase in the likelihood that demonstration beneficiaries with multiple chronic conditions received **a retinal eye examination** by 3.93 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH pilot is associated with a decrease in the likelihood that demonstration beneficiaries with multiple chronic conditions received **medical attention for nephropathy** by 4.67 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH pilot is associated with an increase in the likelihood that demonstration beneficiaries with multiple chronic conditions received **all four diabetes tests** by 3.20 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

**Table 8-12**  
**Maine: Comparison of average change estimates for health outcomes among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 5,708)	1.84	[-0.73, 4.42]	-0.12	[-2.45, 2.21]
Year Two (N = 12,968)	4.08*	[0.56, 7.60]	2.69*	[0.03, 5.36]
Overall (N = 13,911)	3.40*	[0.44, 6.36]	1.84	[-0.24, 3.91]
PQI admissions—overall <sup>2</sup>				
Year One (N = 5,708)	4.79*	[0.11, 9.47]	1.38	[-3.85, 6.62]
Year Two (N = 12,968)	8.22*	[1.53, 14.91]	1.72	[-3.86, 7.30]
Overall (N = 13,911)	7.18*	[1.55, 12.81]	1.62	[-3.28, 6.52]
PQI admissions—acute <sup>3</sup>				
Year One (N = 5,708)	1.13	[-1.50, 3.77]	-0.27	[-2.49, 1.95]
Year Two (N = 12,968)	1.47	[-1.24, 4.17]	0.79	[-1.70, 3.29]
Overall (N = 13,911)	1.36	[-0.99, 3.72]	0.47	[-1.63, 2.57]

(continued)

**Table 8-12 (continued)**  
**Maine: Comparison of average change estimates for health outcomes among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
PQI admissions—chronic <sup>4</sup>				
Year One (N = 5,708)	3.72*	[0.16, 7.27]	1.75	[-2.61, 6.10]
Year Two (N = 12,968)	6.41*	[0.87, 11.96]	0.97	[-2.96, 4.89]
Overall (N = 13,911)	5.59*	[0.92, 10.26]	1.20	[-2.49, 4.89]

NOTES:

- All measures are rates per 1,000 person quarters.
  - Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants with multiple chronic conditions who were eligible for the measure.
  - Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
  - A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
  - Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- <sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.
- <sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.
- <sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.
- <sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH pilot is associated with an increase in the rate of **avoidable catastrophic events** among demonstration beneficiaries with multiple chronic conditions by 3.40 per 1,000 beneficiary quarters.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, a positive estimate in Year Two suggests a potential trend towards an increased rate of **avoidable catastrophic events** among demonstration beneficiaries with multiple chronic conditions, though the *overall* estimate is not statically significant.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH pilot is associated with an increase in the rate of **overall PQI admissions** among demonstration beneficiaries with multiple chronic conditions by 7.18 per 1,000 beneficiary quarters.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH pilot is associated with an increase in the rate of **chronic PQI admissions** among demonstration beneficiaries with multiple chronic conditions by 5.59 per 1,000 beneficiary quarters.

**Table 8-13** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for the population with multiple chronic conditions. With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits are categorized by quintiles of the outcome distribution. The lowest (first) quintile correspond to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index that are more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 8.4.2**.

**Table 8-13**  
**Maine: Comparison of average change estimates for access to care and coordination of care**  
**among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 5,708)	-147.86*	[-280.54, - 15.19]	-6.00	[-88.41, 76.41]
Year Two (N = 12,968)	-45.29	[-136.87, 46.29]	101.99*	[2.06, 201.92]
Overall (N = 13,911)	-76.55	[-174.77, 21.67]	69.08	[-19.00, 157.16]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 5,708)	7.40	[-40.59, 55.38]	-23.97	[-81.70, 33.76]
Year Two (N = 12,968)	5.99	[-51.69, 63.68]	-0.07	[-54.27, 54.13]
Overall (N = 13,911)	6.42	[-43.71, 56.55]	-7.35	[-57.31, 42.61]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 5,708)	13.24	[-3.62, 30.10]	3.12	[-18.27, 24.51]
Year Two (N = 12,968)	9.90	[-0.06, 19.86]	16.07	[-3.87, 36.02]
Overall (N = 13,911)	10.92*	[1.19, 20.64]	12.12	[-6.61, 30.86]
Primary care visits as percentage of total visits (higher quintile = larger percentage)				
Year One (N = 9,793)				
1st quintile	-2.46	[-6.42, 1.49]	-1.05	[-4.33, 2.23]
5th quintile	1.11	[-0.65, 2.86]	0.53	[-1.08, 2.13]
Year Two (N = 4,758)				
1st quintile	3.49	[-1.44, 8.43]	-0.42	[-4.95, 4.10]
5th quintile	-1.86	[-4.52, 0.79]	0.22	[-2.10, 2.53]
Overall (N = 10,243)				
1st quintile	-0.88	[-4.71, 2.95]	-0.88	[-4.35, 2.58]
5th quintile	0.32	[-1.49, 2.13]	0.44	[-1.28, 2.17]
ER visits not leading to hospitalization (per 1,000 beneficiary quarters)				
Year One (N = 5,708)	-4.71	[-23.90, 14.49]	-21.78	[-47.43, 3.87]
Year Two (N = 12,968)	-28.15	[-61.68, 5.38]	-19.52	[-41.45, 2.40]
Overall (N = 13,911)	-21.01	[-47.22, 5.21]	-20.21	[-41.28, 0.86]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 1,360)	45.90	[-122.79, 214.59]	11.70	[-72.69, 96.10]
Year Two (N = 3,034)	72.44	[-11.42, 156.29]	-23.76	[-126.06, 78.54]
Overall (N = 3,896)	64.25	[-38.09, 166.59]	-12.82	[-101.29, 75.66]

(continued)

**Table 8-13 (continued)**  
**Maine: Comparison of average change estimates for access to care and coordination of care**  
**among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 1,730)	-10.61	[-42.20, 20.97]	-6.35	[-43.47, 30.78]
Year Two (N = 3,789)	36.46*	[1.16, 71.76]	16.14	[-29.23, 61.50]
Overall (N = 4,848)	21.80	[-4.70, 48.31]	9.14	[-25.56, 43.84]
Continuity of care (higher quintile = better continuity of care)				
Year One (N = 13,272)				
1st quintile	-2.14	[-6.61, 2.33]	-1.27	[-4.16, 1.62]
5th quintile	0.97	[-0.93, 2.87]	0.71	[-0.85, 2.27]
Year Two (N = 6,957)				
1st quintile	-3.19	[-7.55, 1.17]	-4.96	[-10.01, 0.09]
5th quintile	1.17	[-0.40, 2.73]	2.05*	[0.07, 4.03]
Overall (N = 13,389)				
1st quintile	-2.43	[-6.13, 1.26]	-2.30	[-5.58, 0.98]
5th quintile	1.03	[-0.50, 2.55]	1.08	[-0.51, 2.67]

**NOTES:**

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, a positive estimate in Year Two suggests a potential trend towards an increased rate of **primary care visits** among demonstration beneficiaries, though the *overall* estimate is not statistically significant.
- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH Pilot is associated with an increase in the rate of **surgical specialist visits** among demonstration beneficiaries with multiple chronic conditions by 10.92 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to PCMH practices as a comparison group, a positive estimate in Year Two suggests a potential trend towards an increased rate of **30-day unplanned readmissions** among demonstration beneficiaries with multiple chronic conditions, though the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend toward an increase in continuity of care, as measured by concentration of visits, though the overall estimates are not statistically significant. Specifically, in Year Two the demonstration is associated with an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries with multiple chronic conditions whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers.

**Tables 8-14** and **8-15** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to MAPCP Demonstration practices and two comparison groups: beneficiaries with multiple chronic conditions attributed to PCMH comparison practices and beneficiaries with multiple chronic conditions attributed to non-PCMH practices. Estimates in **Table 8-14** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

The MAPCP Demonstration is also expected to be associated with lower utilization of services such as all-cause admissions and ER care. **Table 8-15** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 8.6.2**.

**Table 8-14**  
**Maine: Comparison of average change estimates for expenditures among Medicare**  
**beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 5,708)	89.23	[-79.23, 257.69]	-93.99	[-214.89, 26.91]
Year Two (N = 12,968)	158.04	[-64.08, 380.17]	136.77*	[1.87, 271.66]
Overall (N = 13,911)	137.07	[-63.82, 337.96]	66.44	[-51.50, 184.38]
Acute-care				
Year One (N = 5,708)	53.30	[-35.17, 141.77]	-62.46	[-136.53, 11.62]
Year Two (N = 12,968)	62.02	[-50.24, 174.28]	75.00*	[0.74, 149.26]
Overall (N = 13,911)	59.36	[-41.92, 160.65]	33.11	[-36.11, 102.33]
Post-acute-care				
Year One (N = 5,708)	13.96	[-43.92, 71.84]	-0.04	[-40.81, 40.74]
Year Two (N = 12,968)	48.71	[-9.06, 106.49]	19.18	[-9.33, 47.68]
Overall (N = 13,911)	38.12	[-15.67, 91.92]	13.32	[-13.84, 40.48]
ER				
Year One (N = 5,708)	-1.28	[-8.91, 6.34]	-12.04	[-24.65, 0.58]
Year Two (N = 12,968)	-4.27	[-13.86, 5.32]	-5.11	[-15.04, 4.82]
Overall (N = 13,911)	-3.36	[-11.69, 4.96]	-7.22	[-17.42, 2.98]
Outpatient				
Year One (N = 5,708)	16.22	[-1.87, 34.31]	1.26	[-20.85, 23.37]
Year Two (N = 12,968)	45.91*	[30.39, 61.42]	17.09	[-12.12, 46.30]
Overall (N = 13,911)	36.86*	[24.71, 49.01]	12.27	[-11.76, 36.29]
Specialty physician				
Year One (N = 5,708)	-0.56	[-17.52, 16.39]	-0.20	[-17.65, 17.25]
Year Two (N = 12,968)	-5.70	[-21.41, 10.02]	10.88*	[1.35, 20.41]
Overall (N = 13,911)	-4.13	[-18.76, 10.50]	7.51	[-2.66, 17.68]
Primary care physician				
Year One (N = 5,708)	-0.79	[-4.71, 3.12]	-4.11	[-8.80, 0.59]
Year Two (N = 12,968)	0.98	[-5.00, 6.96]	2.71	[-0.94, 6.36]
Overall (N = 13,911)	0.44	[-4.63, 5.51]	0.63	[-2.81, 4.08]
Home health				
Year One (N = 5,708)	3.90	[-6.98, 14.78]	3.75	[-6.04, 13.54]
Year Two (N = 12,968)	6.75	[-3.06, 16.56]	10.98	[-0.20, 22.16]
Overall (N = 13,911)	5.88	[-3.53, 15.29]	8.78	[-0.69, 18.24]
Other non-facility				
Year One (N = 5,708)	-0.60	[-7.06, 5.86]	-3.70	[-8.37, 0.98]
Year Two (N = 12,968)	-4.78	[-15.79, 6.24]	-2.17	[-7.98, 3.64]
Overall (N = 13,911)	-3.51	[-11.85, 4.84]	-2.64	[-7.01, 1.74]

(continued)

**Table 8-14 (continued)**  
**Maine: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions: First 2 years of MAPCP Demonstration**

Type of expenditure	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Laboratory				
Year One (N = 5,708)	-0.45	[-3.10, 2.21]	0.99	[-1.63, 3.61]
Year Two (N = 12,968)	0.28	[-1.40, 1.97]	-1.76	[-6.65, 3.14]
Overall (N = 13,911)	0.06	[-1.70, 1.83]	-0.92	[-4.65, 2.81]
Imaging				
Year One (N = 5,708)	1.91	[-0.01, 3.83]	0.28	[-1.29, 1.84]
Year Two (N = 12,968)	2.36	[-0.43, 5.14]	0.77	[-0.55, 2.10]
Overall (N = 13,911)	2.22	[-0.15, 4.59]	0.62	[-0.69, 1.93]
Other facility				
Year One (N = 5,708)	2.64	[-1.14, 6.42]	0.93	[-1.10, 2.97]
Year Two (N = 12,968)	-2.46	[-6.77, 1.84]	1.28	[-0.84, 3.39]
Overall (N = 13,911)	-0.91	[-3.25, 1.43]	1.17	[-0.91, 3.26]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- There is no statistically significant difference in the *overall* growth of **total Medicare expenditures** among beneficiaries with multiple chronic conditions in Maine PCMH Pilot practices relative to beneficiaries with multiple chronic conditions in both PCMH practices and non-PCMH practices. Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend toward faster growth in **total Medicare expenditures** among beneficiaries with multiple chronic conditions in Maine PCMH Pilot practices.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend towards faster growth in **acute-care expenditures and specialty physician expenditures** among beneficiaries

with multiple chronic conditions in Maine PCMH Pilot practices, though the *overall* estimate is not statistically significant.

- The *overall* growth in **outpatient (including FQHCs) expenditures** is \$36.86 faster among beneficiaries with multiple chronic conditions in Maine PCMH Pilot practices relative to beneficiaries with multiple chronic conditions in PCMH practices.

**Table 8-15**  
**Maine: Comparison of average change estimates for utilization among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	Maine PCMH Pilot vs. CG PCMHs		Maine PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 5,708)	8.50	[-5.73, 22.73]	-6.13	[-18.46, 6.19]
Year Two (N = 12,968)	25.16*	[11.15, 39.16]	15.89*	[4.50, 27.28]
Overall (N = 13,911)	20.08*	[7.19, 32.97]	9.18	[-1.04, 19.40]
ER visits not leading to hospitalization				
Year One (N = 5,708)	-2.53	[-26.86, 21.81]	-22.42	[-52.94, 8.10]
Year Two (N = 12,968)	-9.86	[-43.94, 24.21]	-6.62	[-32.06, 18.83]
Overall (N = 13,911)	-7.63	[-36.56, 21.30]	-11.43	[-36.12, 13.26]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the Maine PCMH Pilot is associated with an increase in the rate of **all-cause admissions** among demonstration beneficiaries with multiple chronic conditions by 20.08 per 1,000 beneficiary quarters.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a positive estimate in Year Two suggests a potential trend toward an increased rate of **all-cause admissions** among demonstration beneficiaries with multiple chronic conditions, though the *overall* estimate is not statistically significant.

Although there were no significant associations between the Maine PCMH Pilot and the total Medicare expenditures among beneficiaries with behavioral conditions in Maine PCMH Pilot practices, relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on the outcomes for this population. In the next subsection, we further explore the association between the Maine PCMH Pilot and Medicare beneficiaries with behavioral health conditions.

### **Beneficiaries with Behavioral Health Conditions**

**Tables 8-16** and **8-17** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, for Medicare beneficiaries with behavioral health conditions in the Maine PCMH Pilot compared to two comparison groups: PCMHs and non-PCMHs. The Maine PCMH Pilot targeted beneficiaries with behavioral health issues through one of the 10 Core Expectations—integration of primary care and behavioral health care. Maine PCMH Pilot practices were expected to integrate mental and behavioral health services with primary care to improve utilization of health services and quality of care specifically for individuals with mental illness and substance abuse disorders. Further, the CCTs were expected to help link their high-cost, high-use patients with behavioral health services if needed. Improved integration of physical and behavioral health services was expected to improve access to and coordination of behavioral health services, which could increase use of outpatient behavioral health services and primary care visits. More appropriate use of outpatient care could lead to decreases in rates of hospitalizations and ER visits (both overall and for behavioral health conditions specifically). Given the potential impact on both non-behavioral health and behavioral service use, we examined both types of service use and expenditures.

For this analysis, beneficiaries with behavioral health conditions were defined as those with at least one inpatient claim and/or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder during the 12-month period before participation in the demonstration. Using this criterion, on average, about 19.8 percent of the study sample (Maine PCMH Pilot and comparison group beneficiaries) was identified as having a behavioral health condition.<sup>5</sup> The expenditure outcomes of interest included total Medicare expenditures, expenditures for acute hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments. The service utilization outcomes of interest included all-cause inpatient admissions, all-cause ER visits, outpatient visits with a principal diagnosis of a behavioral health disorder, inpatient admissions with principal diagnosis of behavioral health disorder, and ER visits with a principal diagnosis of a behavioral health disorder. All utilization measures represent a quarterly rate of visits per 1,000 beneficiaries.

Estimates in **Table 8-16** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. Estimates in **Table 8-17** are interpreted as the difference in the rate of utilization associated with the MAPCP Demonstration.

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<sup>5</sup> A behavioral health condition was present in 24.3 percent of Maine PCMH Pilot beneficiaries, 17.1 percent of beneficiaries in the PCMH comparison group, and 15.6 percent of beneficiaries in the non-PCMH comparison group.

A *negative* value corresponds to a *decrease* in the rate of utilization, while a *positive* value corresponds to an *increase* in the rate of utilization.

**Table 8-16**  
**Maine: Comparison of average change estimates for PBPM Medicare expenditures among beneficiaries with behavioral health conditions: First 2 years of MAPCP Demonstration**

Type of expenditure	PCMH Pilot vs. CG PCMHs		PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 5,651)	16.21	[-52.21, 84.62]	-27.57	[-130.23, 75.09]
Year Two (N = 11,891)	32.00	[-64.82, 128.81]	49.67	[-30.61, 129.95]
Overall (N = 12,765)	26.94	[-54.11, 108.00]	24.94	[-54.58, 104.47]
Acute-care				
Year One (N = 5,651)	-21.11	[-58.33, 16.10]	-26.51	[-91.80, 38.78]
Year Two (N = 11,891)	6.23	[-36.88, 49.34]	32.83	[-20.80, 86.46]
Overall (N = 12,765)	-2.52	[-40.38, 35.34]	13.84	[-40.01, 67.68]
ER visits not leading to hospitalization				
Year One (N = 5,651)	-7.38	[-15.03, 0.27]	-3.63	[-11.68, 4.43]
Year Two (N = 11,891)	-5.19	[-11.44, 1.07]	-2.97	[-9.20, 3.25]
Overall (N = 12,765)	-5.89	[-11.99, 0.21]	-3.18	[-9.19, 2.83]
Total for services with a principal diagnosis of a behavioral health condition				
Year One (N = 5,651)	8.37*	[1.44, 15.31]	7.68	[-2.12, 17.48]
Year Two (N = 11,891)	5.30	[-5.49, 16.08]	1.35	[-10.43, 13.14]
Overall (N = 12,765)	6.28	[-2.11, 14.67]	3.38	[-5.80, 12.57]
Total for services with a secondary diagnosis of a behavioral health condition				
Year One (N = 5,651)	3.78	[-31.16, 38.71]	-16.04	[-60.41, 28.33]
Year Two (N = 11,891)	5.59	[-37.75, 48.93]	24.66	[-7.80, 57.11]
Overall (N = 12,765)	5.01	[-32.02, 42.04]	11.63	[-20.06, 43.32]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 8-17**  
**Maine: Comparison of average change estimates for behavioral and non-behavioral health care utilization among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	PCMH Pilot vs. CG PCMHs		PCMH Pilot vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause inpatient admissions				
Year One (N = 5,651)	-9.47*	[-16.45, -2.48]	0.65	[-6.86, 8.16]
Year Two (N = 11,891)	0.90	[-6.51, 8.31]	4.62	[-2.95, 12.19]
Overall (N = 12,765)	-2.42	[-8.63, 3.79]	3.35	[-3.30, 10.00]
ER visits not leading to hospitalization				
Year One (N = 5,651)	-58.09*	[-91.33, -24.85]	-9.27	[-42.23, 23.69]
Year Two (N = 11,891)	-41.18*	[-77.63, -4.73]	1.98	[-28.27, 32.23]
Overall (N = 12,765)	-46.59*	[-79.84, -13.34]	-1.62	[-29.18, 25.94]
Behavioral health inpatient admissions				
Year One (N = 5,651)	-1.59	[-3.74, 0.57]	-0.34	[-2.16, 1.47]
Year Two (N = 11,891)	1.14	[-1.20, 3.48]	0.45	[-1.84, 2.74]
Overall (N = 12,765)	0.27	[-1.72, 2.25]	0.20	[-1.42, 1.82]
Behavioral health ER visits				
Year One (N = 5,651)	-17.29*	[-28.58, -5.99]	2.96	[-3.59, 9.51]
Year Two (N = 11,891)	-9.23*	[-17.86, -0.60]	-2.13	[-10.06, 5.80]
Overall (N = 12,765)	-11.81*	[-20.22, -3.40]	-0.50	[-6.73, 5.73]
Behavioral health outpatient visits <sup>1</sup>				
Year One (N = 5,266)	68.44*	[6.11, 130.78]	36.48	[-28.81, 101.78]
Year Two (N = 11,185)	51.43	[-16.71, 119.58]	8.35	[-71.30, 88.01]
Overall (N = 12,106)	56.84	[-1.41, 115.09]	17.29	[-53.86, 88.45]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique Maine PCMH Pilot participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes, because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with behavioral health conditions assigned to PCMH practices as a comparison group, the *overall* estimates indicate that the Maine PCMH Pilot is associated with a decrease in the rate of **all-cause ER visits** and **behavioral health ER visits** among demonstration beneficiaries with behavioral health conditions.

### 8.7.3 Discussion of Special Populations

The Maine PCMH Pilot and its integration of CCTs focused on coordinating care and resources for beneficiaries in the top 5 percent of health care service utilizers, those at high risk and with multiple chronic conditions, including behavioral health conditions. Multiple site visit interviewees gave anecdotal evidence of medical follow-up and links to necessary health care services and resources offered by providers and CCTs through targeted case management for beneficiaries chronically underserved, and of improved access to ambulatory care and reduced avoidable ER visits and hospital inpatient use.

The analysis of expenditure growth for PCMH Pilot practices' rural beneficiaries and beneficiaries with multiple chronic conditions, when compared to PCMH practices and non-PCMH practices respectively, showed faster growth in Year Two (*Table 8-10*). Thus, any focus on these populations may have been associated with an increase in expenditures, since there was no significant association with expenditures across all PCMH Medicare beneficiaries (*Table 8-7*).

Potential trends toward faster growth in acute-care expenditures and specialty physician expenditures contributed to the positive trend in total Medicare expenditures for beneficiaries with multiple chronic conditions in Maine PCMH Pilot practices, relative to beneficiaries with multiple chronic conditions in non-PCMH practices (*Table 8-14*). This suggests a possible association with CCTs and Maine PCMH Pilot practices in their efforts to reach this subpopulation and provide them with necessary services not previously received.

Maine PCMH Pilot practices were expected to integrate primary care and behavioral health care, and numerous practices discussed their work during Year Two to accomplish this, including using embedded licensed clinical social workers and/or part-time psychologists. Practices also talked about the challenges encountered with this integration and the amount of work required, suggesting that full integration of primary and behavioral health was not realized. This may explain, in part, why we did not see anticipated reductions in overall growth in Medicare expenditures for PCMH Pilot beneficiaries with behavioral health conditions in comparison to PCMH practices and non-PCMH practices (*Table 8-16*). However, the PCMH Pilot was associated with a decrease in the rate of all-cause and behavioral health-related ER visits not leading to hospitalization among beneficiaries with a behavioral health condition, relative to beneficiaries at the PCMH comparison practices (*Table 8-17*). This might possibly be associated with the work of the CCTs to reduce ER utilization among high-needs beneficiaries, including those with significant behavioral health conditions.

## 8.8 Discussion of Maine's Year Two Findings and Next Steps

During the second year of the MAPCP Demonstration, support for Maine's PCMH Pilot remained strong among state officials, payers, and practices. Participating practices in Year One focused on creating the necessary infrastructure for transforming their practices. In Year Two, the

initial Maine PCMH Pilot practices continued to mature, and practices that joined in the Phase 2 expansion reported a fairly easy acclimation. Practices worked on meeting the Pilot's 10 Core Expectations and improving their performance related to these criteria. Many practices reported focusing on using their EHRs to build condition-specific patient registries to identify gaps in care and address these by ordering needed tests and conducting screenings and counseling sessions, as needed. The evaluation of the first 2 years of the PCMH Pilot's participation in the MAPCP Demonstration was associated with few significant changes for Medicare beneficiaries on outcomes related to quality of care, patient health outcomes, access to care, coordination of care, service utilization, and expenditures. Looking at the quantitative data for the overall quality measures, for example, there was only one statistically significant difference among the Maine PCMH Pilot and comparison practices (**Table 8-4** and **Table 8-5**). This may suggest that it was taking practices time to get these processes in place, especially for Phase 2 practices that started in Year Two.

A crucial support to Maine's PCMH Pilot practices were the CCTs, which provided care management coordination to participating practices' most complex and high-risk patients. There were challenges in the second year, as their roles expanded with Phase 2 practices joining and as they provided services to 80 additional practices participating in MaineCare's Health Homes program. Some CCTs found that it took more time than anticipated to staff up to capacity, develop relationships, and clearly define their roles with the new practices. Quality Counts staff found that they needed to provide clear expectations for CCTs, standardize services, and define the duration of available services. During Year Two, they worked with CCTs on putting these processes and parameters in place.

A strong focus on care management, particularly after discharge from the hospital or ER, use of medical record data to identify gaps in needed care, and partnering with the CCTs to identify and work with high utilizers were strategies routinely used by practices to affect beneficiary use of health care services. Many providers and CCT staff shared anecdotal stories of reduced rates of ER and inpatient use during our site visit. Looking at PCMH Pilot beneficiaries, we saw an overall decrease in the rate of ER visits (**Table 8-10**), along with an overall increased rate of primary care visits in comparison to non-PCMH practices (**Table 8-6**). This was not supported, however, by a slowdown in the growth of potentially avoidable events or PQI admissions (**Table 8-5**) or reduced rates of 30-day unplanned readmissions relative to comparison groups (**Table 8-6**).

Further, there was no evidence that total Medicare expenditures for beneficiaries assigned to the Maine PCMH Pilot were growing at a slower rate compared to expenditures for beneficiaries assigned to comparison practices (**Table 8-7**). Practices interviewed during the site visit repeatedly said that showing changes in utilization would take time, so it is possible that we will not see these changes until Year Three. In terms of the budget neutrality, preliminary analysis of the first 2 years of the demonstration suggested that the Maine PCMH Pilot had losses of \$39.7 million (**Table 8-9c**).

The Maine PCMH Pilot and the integration of CCTs focused on coordinating care and resources for people at high risk and for people with chronic multiple conditions. Analysis of total Medicare expenditure growth for rural beneficiaries and beneficiaries with multiple chronic conditions in the Maine PCMH Pilot practices found faster growth in total Medicare

expenditures in Year Two relative to comparison group practices (**Table 8-10**). There were also potential trends for PCMH Pilot beneficiaries with multiple chronic conditions toward faster growth in expenditures for acute-care and specialty physicians in comparison to beneficiaries in non-PCMH practices (**Table 8-14**).

In addition, Maine PCMH Pilot practices were expected to integrate primary care and behavioral health care, and numerous practices discussed their work during Year Two to accomplish this. Integration was challenging, however, and anticipated decreases in total Medicare expenditures or any expenditure category for patients with a behavioral health condition did not occur (**Table 8-16**). Yet, there were some positive findings; the benefits of the CCTs working with these beneficiaries may have been associated with decreased rates of all-cause and behavioral health-related ER visits for PCMH Pilot beneficiaries with behavioral health conditions (**Table 8-17**).

Plans for Year Three of the demonstration included continuing to refine the process for working with the top 5 percent of high-risk, high-utilizer beneficiaries, as well as standardizing CCT services. There was to be a greater focus on engaging patients in their treatment plans, and practices were using EHRs not only for direct patient care, but also to support patient education and performance improvement. Another upcoming focus will be increasing the use of HealthInfoNet, with practices using the data warehouse to get alerts on their patients, notices of admission and discharges, and progress reports from CCTs.

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## CHAPTER 9 MICHIGAN

In this chapter, we present qualitative and quantitative findings related to the implementation of the Michigan Primary Care Transformation (MiPCT) project, Michigan's multi-payer initiative, which Medicare joined when the initiative launched to implement the MAPCP Demonstration. We report qualitative findings from our second of three annual site visits to Michigan, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the association of the demonstration with change in our five outcome domains described in *Section 1.1.2*. We also report characteristics of practices participating in the state initiative.

For the second site visit, in 2013 on October 21 through 23, November 5 through 7, and November 12 through 14, four teams traveled across the state, visiting southeast Michigan, western Michigan, and the Lansing area. The site visit focused on changes and implementation experiences occurring since the October 2012 site visit. During the second site visit, we interviewed providers, nurses, and administrators from participating patient-centered medical homes (PCMHs) and collaborating organizations, including staff from physician organizations, to learn about the perceived impacts of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's entrance. We met with key state officials involved in the implementation of the MAPCP Demonstration to learn how MiPCT, including the payment model and other efforts, such as learning collaboratives to support practice transformation, were progressing and if any changes were made to meet performance goals. We also met with payers to learn about their experiences with implementation and whether the payments to practices and physician organizations were effective in producing desired outcomes or whether modifications were warranted. We also met with patient advocates and provider associations to learn if they observed improvements in beneficiary experience with care and any changes to the delivery of care.

This chapter is organized by major evaluation domains. *Section 9.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in MiPCT. *Section 9.2* reports practice transformation activities. Subsequent sections report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 9.3*); access to care and coordination of care (*Section 9.4*); beneficiary experience with care (*Section 9.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 9.6*); and special populations (*Section 9.7*). The chapter concludes with a discussion of the findings (*Section 9.8*).

### 9.1 State Implementation

In this section, we present findings related to the implementation of MiPCT and changes made by the state, practices, and payers in the second year of its MAPCP Demonstration. We provide information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?

- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors are affecting implementation?

The state profile in **Section 9.1.1** of this report, which describes the current status of major features of the state initiative and the context in which it operated, drew on a variety of sources, including quarterly reports submitted to CMS by MiPCT project staff; monthly calls with MiPCT project staff, CMS staff, and evaluation team members; news articles; state and federal Web sites; and the site visit conducted in October and November 2013. **Section 9.1.2** presents a logic model reflecting our understanding of the link between specific elements of MiPCT and expected changes in outcomes. **Section 9.1.3** presents key findings from the site visit regarding the implementation experience of state officials, payers, and providers during the second year of the MAPCP Demonstration. In **Section 9.1.4**, we conclude with lessons learned during the first 2 years of the MAPCP Demonstration.

### **9.1.1 Michigan State Profile as of October and November 2013 Evaluation Site Visit**

MiPCT was launched on January 1, 2012. Unlike other states where Medicare joined a program already in operation, Medicare joined MiPCT at its launch, although some elements of MiPCT were already in place. MiPCT is collaboration among three private insurers (Blue Cross Blue Shield of Michigan, Blue Care Network, and Priority Health), the Michigan Medicaid agency in the Department of Community Health, and Medicare.

Key features of MiPCT were based on the Blue Cross Blue Shield of Michigan (BCBSM) Physician Group Incentive Program (PGIP), which started in 2005. PGIP was a set of initiatives, including payment incentives, for primary care and specialty physicians and designed to transform the delivery of care and improve health care quality and health outcomes. In 2008, BCBSM began a PCMH initiative within PGIP. As of September 30, 2013, all 375 of the practices participating in MiPCT were designated as PCMHs by PGIP; several had National Committee for Quality Assurance (NCQA) PCMH recognition, but no participating practice had chosen to seek only NCQA recognition.

**State environment.** Michigan experienced major political changes during program implementation, with a new governor in 2011 and a new director of the Department of Community Health in 2012. The state also faced budget deficits in both fiscal year (FY) 2011 and FY 2012. These events, however, did not have any apparent effect on program implementation. In 2013, there were no changes in state leadership and no budget deficit for FY 2013. Political support for the initiative remained strong.

There were no changes to the governance structure from Year One. The Michigan Department of Community Health provided executive leadership and management for the project. A 16-member multistakeholder Steering Committee provided strategic direction and oversight, and a core leadership team directed the project. The MiPCT Steering Committee included state government, physician organizations (described below in **Support to practices**),

payers, and subject matter experts. A Patient Advisory Council served as a resource to the Steering Committee.

Aside from PGIP, several programs were operating in Michigan that may have influenced outcomes for MiPCT participants and the comparison group population.

- Three Michigan physician hospital organizations were chosen as Pioneer accountable care organizations (ACOs), which tested alternative payment arrangements to integrate care delivery systems for better outcomes and lower costs. In 2013, one of these organizations, the University of Michigan Health System, withdrew from the Pioneer ACO program and joined the Physician Organization of Michigan ACO, which operated as an ACO under the Medicare Shared Savings Program.
- A variety of state- and community-based programs supported the health of Michigan residents. The Michigan Department of Community Health worked with local health departments and community agencies to help physician organizations and practice staff in accessing public health and community services.
- BCBSM started an ACO-like program called Organized Systems of Care. In this initiative, some specialists were eligible to receive PCMH-neighbor designation, indicating that the specialist had a partnership with primary care providers to ensure maintenance of a medical-home level of care across providers.
- Michigan received a CMS State Innovation Models (SIM) Initiative Model Design award in 2013. The MiPCT model served as a foundation for primary care and care coordination in the state's SIM design.<sup>1</sup>
- The Southeast Michigan Beacon Community, an initiative that sought to improve the health care system through the use of health information technology (health IT) and health information exchanges (HIEs), served MiPCT practices, but there was no formal link with MiPCT. Federal funding for Beacon (and subsequently Beacon's operations) ended in 2013.

**Demonstration scope.** As of December 31, 2013, five payers were participating in MiPCT: Medicare, Medicaid, BCBSM, Blue Care Network (a Health Maintenance Organization owned by BCBSM), and Priority Health. *Table 9-1* shows participation in Michigan's MAPCP Demonstration by practices, providers, and individuals at the end of the first and second years of the demonstration.

MiPCT was a statewide project, with 314 participating primary care practices with attributed Medicare FFS beneficiaries, accounting for 1,618 providers as of the end of Year Two. Michigan was by far the largest of the MAPCP Demonstration sites. This level of participation represented a decrease of 17 practices (5%) and an increase of 215 providers (15%) since the end

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<sup>1</sup> Michigan's SIM Working Concept can be found at:  
<https://public.mphi.org/sites/sim/resources/Documents/SIM%20Working%20Concept.pdf>

of Year One. Ten practices left the demonstration in 2013 because of failure to maintain their designation; the other seven left for a variety of other reasons. The increase in providers largely was due to the inclusion of physician assistants and nurse practitioners in reports after 2012.

At the end of Year One, the cumulative number of Medicare FFS beneficiaries who had ever participated in the demonstration for at least 3 months was 226,369, and, at the end of the Year Two, it was 267,568—an increase of 18 percent.

**Table 9-1**  
**Number of practices, providers, and Medicare fee-for-service beneficiaries participating in the MiPCT project**

Participating entities	Number as of December 31, 2012	Number as of December 31, 2013
MiPCT Project practices <sup>1</sup>	331	314
Participating providers <sup>1</sup>	1,404	1,618
Medicare FFS beneficiaries <sup>2</sup>	226,369	267,568

NOTES:

- MiPCT practices include only those practices with attributed Medicare FFS beneficiaries, and participating providers are the providers that are associated with those practices.
- The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries ever assigned to participating MiPCT practices and participating in the demonstration for at least 3 months.

ARC = Actuarial Research Corporation; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation.

SOURCES: <sup>1</sup>ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

The state reported that, as of the quarter ending December 31, 2013, MiPCT covered 1,151,518 participants across all participating payers—an increase of 118,056 (11%) since the end of Year One. This increase primarily resulted from the addition of a new commercial payer, Priority Health, in July 2013.

Originally, the state had estimated that more than 1.7 million people, including 358,402 Medicare beneficiaries, would participate in the project. By December 31, 2013, it had met 68 percent of its estimate for participants across all payers, and 55 percent of its estimate for Medicare beneficiaries. Actual enrollment was less for several reasons, most notably because of an overestimation of the number of Medicare beneficiaries eligible for the program. Also, other commercial payers that had expressed their intent to participate initially, ultimately never joined the demonstration.

**Table 9-2** displays the characteristics of the practices with attributed Medicare FFS beneficiaries participating in MiPCT as of December 31, 2013. There were 314 practices participating at that time with an average of five providers per practice. These practices were nearly all office-based (94%), with small numbers of federally qualified health centers (FQHCs) (3%) and rural health clinics (RHCs) (3%). Most practices were located in metropolitan areas (90%), with the remainder in micropolitan areas (7%) or rural (3%) counties.

**Table 9-2**  
**Characteristics of practices participating in the MiPCT project as of December 31, 2013**

Characteristic	Number or percent
Number of practices (total)	314
Number of providers (total)	1,618
Number of providers per practice (average)	5
Practice type (%)	
Office-based practice	94
Federally qualified health center	3
Critical access hospital	0
Rural health clinic	3
Practice location type (%)	
Metropolitan	90
Micropolitan	7
Rural	3

ARC = Actuarial Research Corporation; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation.

SOURCE: ARC Q9 MAPCP Demonstration Provider File. (See Chapter 1 for more details about this file.)

In **Table 9-3**, we report demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating MiPCT practices during the first 2 years of the MAPCP Demonstration (January 1, 2012 to December 31, 2013). Beneficiaries with fewer than 3 months of eligibility for the demonstration are not included in our evaluation or this analysis. Nearly identical results were reported for Year One. Of beneficiaries assigned to MiPCT practices during first 2 years of the demonstration, 19 percent were under the age of 65, 46 percent were between the ages of 65 and 75, and 25 percent were between the ages of 76 and 85, with a mean beneficiary age of 70 years. Beneficiaries were mostly White (86%); eighty-one percent of participants were urban dwelling, and 58 percent were female. Sixteen percent were dually eligible for Medicare and Medicaid, and just over one-quarter (26%) were eligible for Medicare originally because of disability. One percent of beneficiaries had end-stage renal disease (ESRD), and 1 percent resided in a nursing home during the year before their assignment to a MiPCT practice.

Using three different measures—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions—we describe beneficiaries' health status during the year before their assignment to a MiPCT practice. Beneficiaries participating in MiPCT had a mean HCC score of 1.05, meaning that they were 5 percent sicker than an average Medicare FFS beneficiary, or, in other words, they were predicted to be 5 percent more costly than an average Medicare FFS beneficiary during the year before their assignment to a MiPCT practice. Sixty-three percent of the population had a low (zero) score on the Charlson Comorbidity Index, indicating that these beneficiaries did not receive medical care for any of the 18 clinical conditions in the index in the year before their assignment to a participating MiPCT practice.

**Table 9-3**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the MiPCT project from January 1, 2012, through December 31, 2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	267,568
Demographic characteristics	
Age < 65 (%)	19
Ages 65–75 (%)	46
Ages 76–85 (%)	25
Age > 85 (%)	10
Mean age	70
White (%)	86
Urban place of residence (%)	81
Female (%)	58
Dual eligibles (%)	16
Disabled (%)	26
End-stage renal disease (%)	1
Institutionalized (%)	1
Health status	
<b>Mean HCC score groups</b>	1.05
Low risk (< 0.48) (%)	25
Medium risk (0.48–1.25) (%)	51
High risk (> 1.25) (%)	24
<b>Mean Charlson Index score</b>	0.81
Low Charlson Index score (= 0) (%)	63
Medium Charlson Index score ( $\leq 1$ ) (%)	18
High Charlson Index score (> 1) (%)	19
Chronic conditions (%)	
Heart failure	5
Coronary artery disease	12
Other respiratory disease	9
Diabetes without complications	18
Diabetes with complications	4
Essential hypertension	34
Valve disorders	2
Cardiomyopathy	1
Acute and chronic renal disease	7
Renal failure	3
Peripheral vascular disease	2
Lipid metabolism disorders	19
Cardiac dysrhythmias and conduction disorders	9
Dementias	1
Strokes	1

(continued)

**Table 9-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the MiPCT project from January 1, 2012, through December 31, 2013**

Demographic and health status characteristics	Percentage or mean
Chronic conditions (%) (continued)	
Chest pain	5
Urinary tract infection	5
Anemia	7
Malaise and fatigue (including chronic fatigue syndrome)	2
Dizziness, syncope, and convulsions	6
Disorders of joint	7
Hypothyroidism	6

NOTES:

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to a PCMH after the start of the demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid.

HCC = Hierarchical Condition Category; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

SOURCE: Medicare claims files.

The most common chronic conditions diagnosed among the Medicare FFS beneficiaries were hypertension (34%), lipid metabolism disorders (19%), diabetes without complications (18%), and coronary artery disease (12%). Less than 10 percent of beneficiaries were treated for any of the other chronic conditions.

**Practice expectations.** Practices participating in MiPCT were expected to meet four core requirements. First, they had to attain PCMH status by July 2010 and continue to maintain that status. Practices secured PCMH status either through PGIP PCMH designation or NCQA PPC® PCMH™ Level 2 or Level 3 recognition.

Under PGIP, a practice's PCMH score was calculated using both process and outcome measures. A primary care practice's medical home capacity was measured across 12 "domains of function" developed by BCBSM and physician organizations. Examples of the domains include individual care management, self-management support, preventive services, and coordination of care. Each domain included several specific medical home capabilities. The rest of the practice's score was based on performance in certain areas that demonstrated successful implementation of the medical home model, such as increased use of preventive services, increased generic drug utilization, and decreased diagnostic imaging utilization. BCBSM and project staff believed that the PGIP standards were more rigorous than those of NCQA.

Certain domains within PGIP (registry functionality, expanded access, performance reporting, and care management staffing requirements) were "must-pass" standards for MiPCT

participation (i.e., practices not meeting these requirements could not participate in MiPCT). In the 2012–2013 guidelines, BCBSM introduced new standards that strengthened the referral and tracking capacity between specialists and primary care providers.

Practices had to be affiliated with a participating physician organization. Physician organizations have a long history in Michigan; originally, they primarily handled managed care contracting, but they also provided substantial administrative support to practices participating in BCBSM's PGIP. The physician organizations simplified administration and played a critical role in the project.

MiPCT required either the practice or the relevant physician organization to hire care managers to provide care coordination and case management to patients. The care managers were the heart of the project and the primary mechanism for cost savings. Since care managers could have been hired by the practice or physician organization, mandatory staffing ratios were established at the physician organization level. Originally, MiPCT expected one moderate and one complex care manager (two in total) for every 5,000 patients served by a physician organization. They further anticipated that moderate care managers would work primarily with medium-risk patients, while complex care managers would work only with those at highest risk. Practices and physician organizations raised concerns, however, that the staffing model did not adequately meet the needs of small practices with fewer complex patients or of pediatric practices. This led to the development of a hybrid care manager—staff who could work with patients with moderate and complex needs. The staffing requirement for hybrid care managers was effectively 1:2,500 (two for every 5,000 patients). Project staff reported that 433 care managers were in place by the last quarter of 2013.

Physician organizations and practices signed annual participation agreements with the state that required compliance with contractual obligations, including participation in learning activities. Learning activity options included regional meetings, learning collaboratives, and webinars and were designed to create a common knowledge base and opportunity to share best practices.

**Support to practices.** MiPCT included a complex payment system designed to provide financial incentives and rewards to practices, with payment schedules and methodologies varying by payer. Each payer financially supported the participating practices and physician organizations through three types of payments: practice transformation payments, care coordination payments, and incentive payments (*Table 9-4*):

- *Practice transformation payments.* Practices received these payments directly. Transformation payments were intended to compensate practices for the investment in and operational costs of medical home infrastructure, such as purchasing all-patient registry software.
- *Care coordination payments.* These payments were made to physician organizations to fund care management services. Physician organizations keep the payment for the care managers they hired and passed on the care management payment on to practices that hired their own care managers. Physician organizations submitted quarterly

financial reports to MiPCT to ensure that the care management payments were only spent on care management activities.

- *Incentive payments.* Payers made incentive payments into a pool administered by the University of Michigan Health System that was dispersed to physician organizations semi-annually. The pooled funding was distributed to physician organizations on the basis of their affiliated practices' performance on metrics chosen by the MiPCT Performance Incentive Committee. There were four performance metric sets (a 6-month set, a 12-month set, a 2013 Year Two set, and a 2014 Year Three set). For the first performance period (the 6-month set), incentive payments were based on process measures, including access (e.g., same-day and extended-hour appointments), all-patient registry functionality, and care management staffing. These payments were distributed in January and February 2013. As MiPCT progressed in 2013, the Performance Incentive Committee included fewer process measures and more outcomes measures (e.g., measures of ambulatory-care-sensitive hospitalizations and adolescent immunizations). Payments for the second performance period (the 12-month set) were made to physician organizations in July 2013. Distribution of payments for the Year Two and Year Three metric sets took place in 2014 and 2015. Physician organizations were required to pass through at least 80 percent of the payments to practices. MiPCT imposed no restrictions on how practices and physician organizations used their incentive payments, and these expenditures were not monitored.

In addition to payments to participating practices and physician organizations, all payers also funded program management, evaluation, data analytics, and learning activities through a per member per month (PMPM) administrative support fee.

**Table 9-4**  
**PMPM MiPCT project payment amounts**

Payment type	Medicare	Medicaid managed care	Commercial
Practice transformation	\$2.00	\$1.50	\$1.50 <sup>1</sup>
Care coordination	\$4.50	\$3.00	\$3.00 <sup>1</sup>
Incentive	\$3.00	\$3.00	\$3.00 <sup>1</sup>
Administrative	\$0.26	\$0.26	\$0.26
Total	\$9.76	\$7.76	\$7.76

NOTES:

- At the start of the project, Blue Cross Blue Shield of Michigan calculated an amount to pay for each care coordination service that would result in a total amount paid to the physician organizations and practices through the FFS care management payments that equaled the amount paid through the PMPM care management payments. This amount was based on assumptions about how many patients would need care management services and the caseload carried by each care manager.

<sup>1</sup> Or equivalent.

FFS = fee-for-service; MiPCT = Michigan Primary Care Transformation; PMPM = per member per month.

Medicare and Medicaid used a PMPM payment method for all payments. From January 1, 2012, to December 31, 2013, CMS paid a total of \$44,005,450 in MAPCP

Demonstration fees for the 267,578 Medicare beneficiaries participating in MiPCT. Medicare paid a higher amount than commercial insurers or Medicaid, because a greater proportion of Medicare beneficiaries were assumed to be more complex and to need more care management.

Commercial plans made FFS payments designed to be equivalent to the PMPM payments for practice transformation, care coordination, and incentives. Further, commercial plans already making payments for any of the nonadministrative components before participating in MiPCT were not required to make additional payments to support those activities.

BCBSM and Priority Health made practice transformation and care coordination payments on an FFS basis. Practice transformation payments were made to practices and physician organizations using an enhanced fee schedule for certain procedure codes (i.e., Healthcare Common Procedure Coding System [HCPCS] codes G9001, G9002, G9007, G9008, S0257 and Current Procedural Terminology [CPT] codes 98961, 98962, 98966, 98967, 98968, 99487, 99489). If the practice employed the care manager, the practice billed for services provided by the care manager; if the physician organization employed the care manager, that organization billed for those services. In 2013, BCBSM made additional payments to providers because the evaluation and management and G-code billings were not equivalent actuarially to the payment levels agreed upon for MiPCT. BCBSM committed to continuing this practice. To qualify for the additional payments, physician organizations and practices had to hire and train at least 80 percent of the care managers necessary to meet program staffing requirements. Every MiPCT-participating practice affiliated with the physician organization had to submit claims for care management services.

Blue Care Network, a health maintenance organization owned by BCBSM, took a hybrid approach. Blue Care Network paid practice transformation payments as a PMPM amount. This payment already was built into the payment rate for capitated practices when the project began, but it was a new payment to noncapitated practices. Like BCBSM and Priority Health, Blue Care Network paid for care coordination on an FFS basis through the use of G-codes.

Incentive programs also varied across payers. BCBSM, Blue Care Network, and Priority Health had their own incentive programs that paid bonuses for different PCMH capabilities and quality of care measures. Although each insurance plan maintained its own incentive program, all were required to show that they paid the actuarial equivalent of \$3.00 PMPM, the amount required by MiPCT, to participating practices. Medicare and Medicaid paid a PMPM amount into an incentive fund, and those funds were divided among physician organizations and practices. Unlike BCBSM and Blue Care Network, Priority Health did not commit to supplemental payments when their payments fell below the amounts in *Table 9-4*.

All participating practices were required to be affiliated with a physician organization, on which MiPCT depended to support PCMH practices. Physician organizations, which were unique to Michigan's MAPCP Demonstration initiative, had many responsibilities in the project. They collected data and submitted required reports on behalf of the practices; they communicated project expectations to participating practices and helped practices meet those requirements; they hired care managers to share across affiliated practices too small to sustain their own care management staff; and they distributed the MiPCT payments. State and payer stakeholders believed that the physician organizations greatly helped with the implementation of MiPCT.

MiPCT also supported practices through several learning activities. In addition to a series of webinars and in-person summits, four waves of learning collaboratives were held between November 2012 and June 2013. The learning collaboratives focused on the role of the care manager and how to embed care managers effectively within practices. Care managers and practice teams were trained to provide self-management support, care coordination, and links to community services. The learning collaboratives consisted of three in-person meetings, webinars, and conference calls, all funded through the \$0.26 PMPM administrative fee.

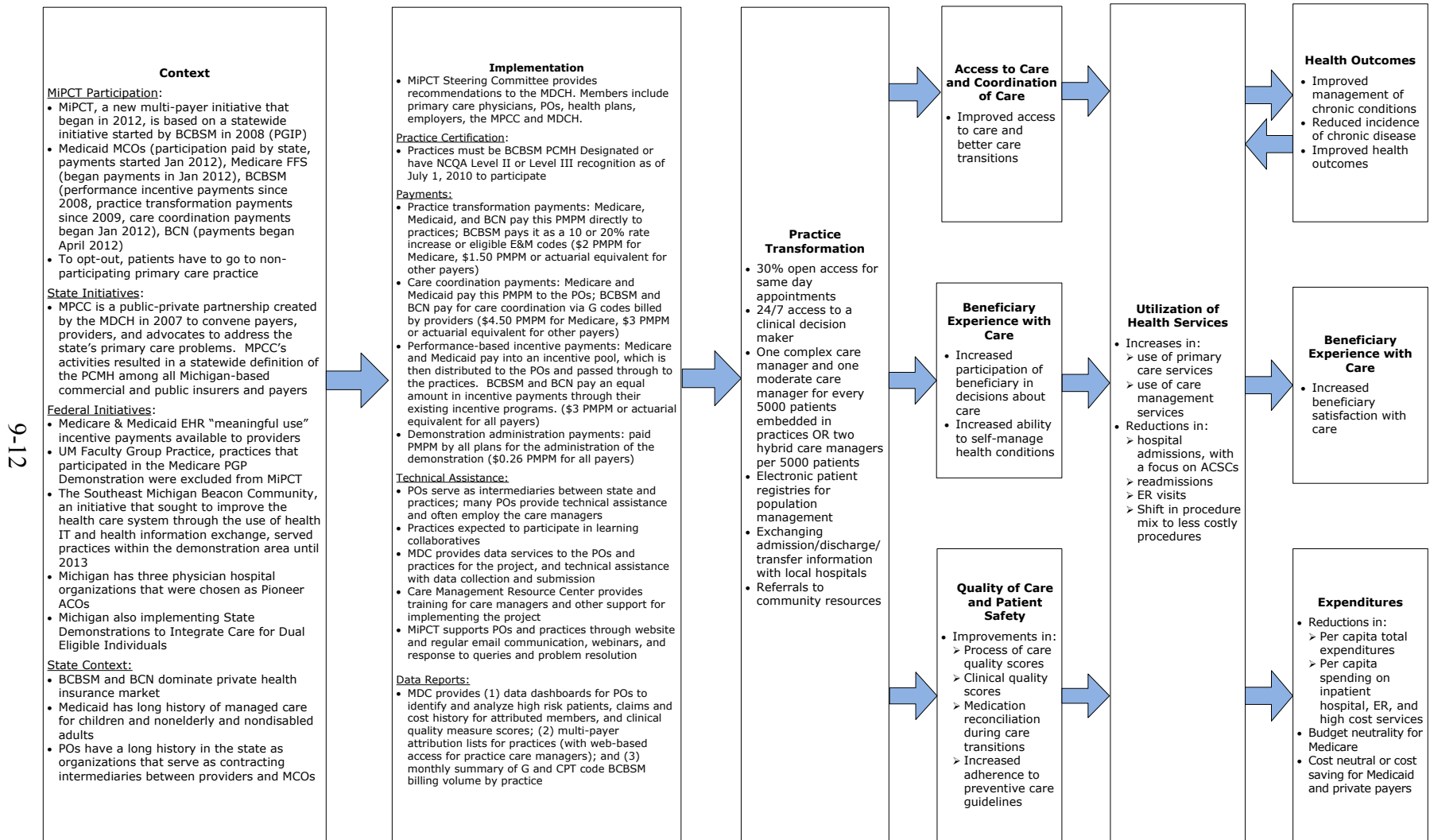
The Michigan Data Collaborative provided data analytic support for MiPCT. It calculated risk scores for patients and provided a data dashboard to physician organizations through a Web portal. The dashboard drew from claims, encounter, eligibility, and attribution data from multiple payers. It gave physician organizations the ability to assess their performance compared to their peers and to drill down to the practice and individual patient level. The dashboard was updated bimonthly and included data going back to January 2010; it was launched in October 2012 with limited capabilities and only included Medicare and Medicaid data. The Michigan Data Collaborative added BCBSM, Blue Care Network, and Priority Health data in 2013. The Collaborative continued to add new capabilities and reports for participating physician organizations.

Starting in December 2012, the Michigan Data Collaborative began providing the all-payer patient list to physician organizations. This list, prepared monthly, provided physician organizations with a list of all patients eligible for MiPCT care management services and attributed to the physician organization. It included patients covered by any of the five payers participating in MiPCT and provided a variety of information about patients, including risk scores and the number of emergency room (ER) and primary care provider visits in the last 6 months.

### **9.1.2 Logic Model**

*Figure 9-1* portrays a logic model of the MiPCT project. The left-hand column of the figure describes the context for the project. The project context informed the implementation of MiPCT, which incorporated several strategies to promote transformation of practices to PCMHs. MiPCT included practices that had been designated medical homes by BCBSM or NCQA as of 2010. Practices received extra payments for practice transformation, care management, and meeting quality metrics. Care management was the centerpiece of MiPCT. Physician organizations acted as intermediaries between practices and payers, helping with project implementation. Beneficiaries in these transformed practices were expected to have better access to care and more coordinated care; to receive safer, higher-quality care; and to be more engaged in decision making about their care and management of their health conditions. These improvements in care were expected to promote more efficient utilization patterns, including increased use of primary care services and reductions in inpatient admissions, readmissions within 30 days after discharge, and ER visits. These changes in utilization patterns were expected to produce improved health outcomes (which could, in turn, reduce utilization), greater beneficiary satisfaction with care, changes in expenditures consistent with utilization changes, and reductions in total per capita expenditures, ensuring budget neutrality for the Medicare program and cost savings for other payers involved in MiPCT.

**Figure 9-1**  
**Logic model for MiPCT project**



ACO: Accountable Care Organization; ACSC: Ambulatory Care Sensitive Conditions; BCBSM: Blue Cross Blue Shield of Michigan; BCN: Blue Care Network; CMS: Centers for Medicare and Medicaid Services; EHR: Electronic Health Record; ER: Emergency Room; FFS: Fee-for-Service; IT: Information Technology; MCO: Managed Care Organization; MDC: Michigan Data Collaborative; MDCH: Michigan Department of Community Health; MiPCT: Michigan Primary Care Transformation Project; MPCC: Michigan Primary Care Consortium; NCQA: National Committee for Quality Assurance; PCMH: Patient-Centered Medical Home; PGIP: Physician Group Incentive Program; GGP: Physician Group Practice; PMPM: Per Member Per Month; PO: Physician Organization

### **9.1.3 Implementation**

This section uses primary data gathered from the site visit to Michigan in October and November 2013, and other sources, to present key findings from the implementation experience of state officials, payers, and providers to address the evaluation questions described in *Section 9.1*.

#### **Major Changes During the Second Year**

**Addition of new payer.** The most significant change in Michigan's initiative over the past year was the addition of a new payer, Priority Health. Although the contract was not signed until July, Priority Health began payment for their commercial line of business effective June 1, 2013, bringing more than 100,000 new participants into MiPCT. Priority Health's Medicaid managed care clients had been enrolled since the beginning of the MAPCP Demonstration. The addition of Priority Health had the greatest impact in the western part of Michigan's Lower Peninsula, where Priority Health had a larger presence than BCBSM. The state had expected Priority Health to join the initiative at the launch of MiPCT. The plan had submitted a letter of support when the Michigan Department of Community Health applied to participate in the MAPCP Demonstration and had served on the Steering Committee, but Priority Health decided not to join when the state initiative began. Stakeholders cited various reasons for Priority Health's decision ultimately to join MiPCT, including new management at the health plan and advocacy from their provider network, which wanted to offer care management to their patients.

The addition of Priority Health did not require substantial structural changes to the state initiative or by participating practices. The plan, however, needed to make some changes, such as providing data to the Michigan Data Collaborative. Nearly half of Priority Health members were enrolled in a high-deductible plan or health savings account, which required the plan to develop a creative payment approach for care coordination. To avoid triggering patient cost-sharing for care management services, Priority Health required providers to submit claims for care management activities, but the plan processed and paid the claim at \$0. Then, every 60 days, Priority Health calculated a 'batch' payment to each practice based on the number of claims for care management services submitted by the practice.

**Launch of Patient Advisory Committee.** The Patient Advisory Committee held quarterly phone calls and served as a resource to program leadership, including the MiPCT Steering Committee, subcommittees, and other advisory groups. This committee consisted of seven patients across the state who either had direct experience with care managers or were parents of people with experience with care managers through MiPCT. The Patient Advisory Committee was formed to ensure that patients had a voice in program implementation and operations. Committee members presented their own views and were not considered representatives of specific patient constituencies.

**New partnership with the Michigan Health Information Network.** Starting in late 2013, physician organizations participating in MiPCT could volunteer to participate in the Michigan Health Information Network's (MiHIN) Admission-Discharge-Transfer (ADT) notification service. (The MiHIN was the statewide HIE). The ADT service sent practices (or their care managers) electronic notifications when their attributed patients were admitted to or

discharged from a hospital, transferred between hospitals, or treated in an ER. Project staff anticipated that this would improve how quickly care managers would find out about these events. At the time of the site visit, stakeholders reported that this partnership was not yet operational, but they anticipated that 17 of the 35 MiPCT physician organizations would join this program and that hospitals affiliated with three health systems would report these events through MiHIN.

## **Major Implementation Issues During the Second Year**

**Defining the work of care managers.** In the second year, the major focus of Michigan's implementation efforts was training care managers and integrating them into the practices; more than 400 were trained and in place by May/June 2013. Although this was a major accomplishment, state officials and providers reported that some challenges remained, including difficulties in integrating the care managers into some practices and lower-than-expected average caseloads for care managers.

The Michigan Public Health Institute (MPHI) conducted a survey of care managers in May and June 2013 that examined both caseload and integration, among other topics (Tanner, 2013a). MPHI invited 433 care managers to take the survey and received survey responses from 228. According to their self-reports, moderate care managers had an average caseload of 60 patients, hybrid care managers had 67, and complex care managers had 39. (Most care managers were hybrid care managers.) The relatively low caseload was of concern to some stakeholders, as care management was seen as the key to success in both improving care and containing costs. If these staff did not serve sufficient numbers of patients, the program's quality and savings outcomes could be affected. Survey results also confirmed that care management staff were not yet fully integrated into some practices. For example, 3 percent of responding care managers reported that they never conversed with the primary care provider about MiPCT-eligible patients, and only 77 percent reported that they had a desk at all practice locations. MiPCT continued to work on these issues (integration and caseload), tracking implementation and fostering the spread of promising practices among care managers.

**Ongoing billing challenges.** A significant implementation issue identified in the 2012 site visit was practices' difficulties in using G-codes to bill commercial payers for care management services. During the 2012 visit, commercial payers reported that they wanted to use this FFS payment model instead of the PMPM approach used by Medicaid and Medicare, because they wanted to track care management activity and to offer incentives to practices to provide care management services by rewarding volume. Providers reported numerous denials of payment for these services, and commercial payers reported receiving fewer than anticipated claims for these services. Stakeholders believed that the denials resulted from problems in the billing and payment systems and that the difficulty in obtaining payment contributed to the lower-than-expected claims volume.

In addition, some stakeholders contended that the supplemental payment made by BCBSM to make the physician organizations and practices 'whole' for care coordination costs reduced the incentive to bill for care management services. (As previously discussed, both physician organizations and practices billed for care management services depending on which employed the care manager.) Even if they did not bill for care management services, they would ultimately receive funding for the care manager positions. To address that concern, in 2013

BCBSM implemented several requirements intended to ensure that those receiving the make-whole payments were billing for care management services, including clarifying that only physician organizations and practices that engaged at least 10 percent of eligible adult members in care management, according to claims data, would receive the payments.

In 2013, both project staff and BCBSM devoted significant resources to addressing the G-code billing problem. They provided written billing guidelines for the codes and both group and individual training. They also generated reports showing the number of care coordination claims submitted and paid to help diagnose billing problems and target technical assistance resources. Stakeholders reported that these initiatives reduced the number of problems, although billing problems still remained at the time of the site visit.

**Problems with all-payer patient list.** Although practices and physician organizations appreciated having a single monthly list of all patients attributed to the organization or practice by the five participating payers—rather than receiving individual lists from each payer—they still cited difficulties with the list. Some reported that the list did not contain what they believed were all MiPCT-eligible patients served by the practice; that patient names were sometimes missing or incomplete; and that there were many differences in the information provided by the payers (e.g., each payer had a different format for member IDs and BCBSM members, with high-deductible plans flagged in a different field than that for Priority Health members with high-deductible plans). One care manager was frustrated at how often the list changed, which led to care managers working with patients no longer eligible for their services. Another physician organization criticized the claims data used to attribute patients to practices as “old and incorrect.” Part of the confusion stemmed from the fact that many self-insured employer plans did not participate in MiPCT. Thus, a patient may have had a BCBSM membership card, but still not be eligible for MiPCT services. There was also some confusion among practices and care managers about how the list was intended to be used. Some understood that the list was simply a complete list of all patients attributed to the practice by participating payers, while others believed that risk scores included in the report were to be used to determine patients eligible for care management services.

**Not all payers participated in MiPCT.** Care managers and primary care providers were frustrated that they needed to limit care manager services to patients eligible for MiPCT and could not offer these services to all patients who needed them. Interviewees reported continued resistance from other payers to joining MiPCT because it was perceived as a “Blues project.” Interviewees reported that providers put pressure on nonparticipating payers to join, and a state official noted that one nonparticipating payer had reported “getting grief” from participating physicians. One payer mentioned that participating in MiPCT could improve a payer’s competitive advantage, because it provided care management.

## **External and Contextual Factors Affecting Implementation**

**The influential role of physician organizations.** Most respondents were supportive of the physician organizations’ role, including one state official who argued that participating in MiPCT would have been much more work for the practices without them. One payer noted that physician organizations complicated implementation by creating a layer between the payers and the practices. One payer claimed, “The program [MiPCT] has been very ambivalent about whether or not the physician organizations are in the way or a true partner,” further noting times

when “[a physician organization and a practice] look at each other, trying to see who is going to get the job done.” Physician organizations are independent from one another, and the relationships between individual physician organizations and their affiliated providers varied.

#### **9.1.4 Lessons Learned**

Several key lessons emerged during the second round of site visits.

**Consistency across payers may have eased implementation.** Stakeholders felt that greater consistency across the participating payers would have created fewer challenges in implementation. One payer reported, “[Providers] spend too much time trying to figure out who the payment is from [and] what it’s for.” Stakeholders also sought greater consistency in data formats—especially in the data reported on the all-payer patient list.

**A strong emphasis on education and learning was important.** Conducting timely education and learning activities was critical to successful program implementation. One care manager noted that the regional meetings and learning collaboratives helped practices identify other participating practices, which facilitated peer-to-peer learning. Also, while one payer was pleased with the billing seminars designed to help practices bill correctly, the payer representative continued, “I just wish we would have done it 9 months earlier.”

### **9.2 Practice Transformation**

This section seeks to answer evaluation research questions related to the features of the practices participating in MiPCT, identifying the changes that practices made as they continued in the demonstration, describing technical assistance to practices, summarizing their views on the payment model, and giving an account of experiences with the demonstration thus far.

Overall, practices consistently commented that MiPCT made an important difference to patients receiving their services, and they wanted it to continue. In the view of practices, the most positive contribution was the availability of care managers. Virtually all physicians interviewed believed that care managers improved the lives of the patients with whom they worked and made the lives of physicians easier.

Several respondents said there were all pros and no cons to the state initiative, but others expressed frustration with several aspects. Concerns included the lack of space for care managers in the practice; the burden of documentation and difficulties of FFS billing for care management; the general funding level for the initiative; lack of access to timely claims information; lack of physician orientation to the care manager role and imperfect integration of care managers into practices; and the requirement for 30 percent open access slots in the daily schedule.

Despite these challenges, all practices planned to continue to participate in the state initiative. Physicians and other practice staff frequently voiced concerns about what would happen if Medicare and Medicaid’s participation in the state initiative ended. Practices universally did not want to revert to providing care without care managers; indeed, they wanted to expand care manager services to all of their patients needing them and not limit them only to payers participating in MiPCT.

### 9.2.1 Changes Practices Made During Year Two

The primary focus of practice transformation during Year Two of the MiPCT initiative was integrating care managers into practices, initiating new processes of care, such as ADT monitoring, and increasing the focus on patients with chronic conditions.

**PCMH recognition and practice transformation.** All practices participating in MiPCT were PCMH-designated under the PGIP program and required to maintain their designation during all demonstration years. This requirement was unchanged since the first site visit; during 2013, 10 practices left the demonstration because of failure to maintain their designation. In addition to the requirement that practices be PCMH-designated by PGIP or NCQA, MiPCT required several additional capabilities, including expanded hours, 24/7 access to a clinical decision maker, and 30 percent open access slots. While these requirements were a condition of participation at the time of the first site visit, in 2013 practices had to demonstrate that they met the requirements. Most practices reported being able to meet these requirements. Smaller practices, however, struggled to expand hours and maintain 30 percent open access appointments, because they lacked the staff needed to extend hours or see numerous unscheduled patients.

Since the first site visit, a primary focus at the practice and physician organization levels was integrating care managers into the practices, especially clarifying the care manager's role in the practice. This included care managers developing working relationships with the clinical staff in practices, building their caseloads, and beginning to expand their role to take on responsibilities in population health management in addition to working with individual patients.

A key change at the time of our 2012 site visit was the emergence of the hybrid model of care management. This move toward a hybrid model solidified in 2013. In a survey conducted by MPHI, 65 percent of care managers reported themselves as hybrids, while 17 percent reported themselves as moderate and 16 percent reported themselves as complex. Given this departure from the original planned model, an important area of work in Year Two was clarifying how these roles would be divided and how each type of care management would be delivered. Physician organizations and practices handled the division of complex and moderate care management differently. Some physician organizations centralized complex care management for the entire physician organization, while moderate care managers were embedded in practices and worked with outpatients. Other physician organizations had care managers embedded in practices doing both moderate and complex care management. Finally, a subset of practices did not have information about care transitions and, therefore, only provided moderate care management.

In addition to differences in the division of work among complex, moderate, and hybrid care managers, the roles of complex and moderate care managers were defined differently across practices. Many practices used the MiPCT program definition of complex and moderate care management. They defined moderate care management as care given to outpatients with chronic diseases that focused on patient education and self-management, and they reserved the term "complex care management" for assistance to patients experiencing transitions of care (hospital or nursing home admissions, discharges, or transfers). On the other hand, some physician organizations and care managers used the most literal definition. They associated complex care management with patients who had the most complex needs, usually multiple chronic conditions, and they defined moderate care management as work with patients who had perhaps one problem

or who needed short-term intervention, such as after hospitalization for an orthopedic procedure. These differences in terminology and definition of the care manager role were a barrier to a consistent understanding of the care manager role across physician organizations and practices.

Another key difference since the last site visit was the emergence of patient self-management education as a primary role for many care managers. At the first site visit, most care managers focused on transitions of care, in line with what they were trained to do under the Geisinger model training provided to all complex and hybrid care managers in Year One. Care managers said that in Year Two, the area they worked on most was diabetes education and management. They helped patients with self-management of their diabetes, including diet and exercise education; reconciliation of medications; and linking patients to community programs and resources.

In Year Two, care managers focused on building their caseloads and establishing ongoing relationships with patients. In both our site visit and the MPHI survey, care managers reported building their caseloads in a variety of ways, mainly by physician referrals and the all-payer patient list. According to the MPHI survey, 91 percent reported receiving patients by physician referral, 79 percent received patients from the MiPCT list, and 61 percent reviewed patients scheduled for visits to see who was eligible for care management.

In the care manager survey conducted by MPHI, care managers reported that two key challenges were optimizing the embedding of care manager and increasing physician engagement. This was echoed by care managers and state officials during the 2013 site visit. These stakeholders saw a need to educate practice staff about the role of care managers and how to integrate care management into the workflow of seeing patients. In addition, the need for additional physician engagement in the goals of care management and MiPCT was cited in both the site visit and the MPHI survey. One way of building physician engagement and increasing care management integration was team “huddles,” mentioned by several practices as something they instituted. Overall, care managers reported frequent communication with physicians about their MiPCT patients. According to the MPHI care manager survey, 42 percent of care managers conferred with doctors about MiPCT patients mainly daily, and another 35 percent conferred on a weekly basis (Tanner, 2013a).

As a result of efforts over the past year to integrate care managers more effectively into practices, most care managers reported working well with their doctors and felt appreciated by them. Some care managers reported that a few doctors “didn’t get it” and were not using them optimally. Sometimes it took several months to work out a routine in which care managers could work comfortably and efficiently with a practice. The three chief challenges confronting care managers were improving work flow and time management, improving care management integration into practices (more staff education, more time needed), and improving physician engagement (Tanner, 2013a).

According to the MPHI survey, care manager accommodations (office space, telephone access, and access to emergency health records) varied by practice. If these were not satisfactory, the care manager’s job was more difficult. Most care managers (66%) reported having a private workspace, with 77 percent having at least a desk or computer (Tanner, 2013a). Thus, while a

large majority of care managers had at least minimal space and equipment, a significant minority did not.

A key effort in improving processes was integrating information on patients' hospital admissions, discharges, and transfers into the care management workflow. Practices varied in their access to ADT information and how they used it. Some practices, especially those affiliated with a health system, automatically received ADT information daily. Other practices had lag times in receiving ADT information, and they often relied on faxed discharge summaries to identify patients who had been to the hospital or ER. Improving ADT information across the demonstration was an ongoing effort and is detailed in *Section 9.4.1*.

An area for future growth, according to the practices, was developing a more systematic approach to preventive services and managing population health. A few care managers reported efforts to increase use of preventive services in their practices, using practice registries or electronic health records (EHRs) to identify patients in need. Most care managers, however, said that they had not worked extensively on this, although they hoped to be able to do in future.

A major concern about MiPCT among practices, especially physicians, was the restriction of care management services to patients on the all-payer patient list of eligible patients. Sometimes doctors were confused about who was eligible and who was not, leaving it to the care managers and practice nurses to sort it out. Care managers frequently reported a lack of understanding about how “the list” worked—patients who were eligible one month would later lose eligibility, or patients who they thought should be eligible and would benefit from services were not on the list. Doctors continued to express frustration that they could not offer care manager services to all patients who needed it, either because of patients moving in and out of eligibility or a broader desire for the initiative to be all-payer.

**Practice staffing changes.** Since the 2012 site visit, physician organizations hired a variety of professionals, including pharmacists, nutritionists, social workers, and diabetes educators. The central MiPCT activity of the past year, however, was to complete the integration of care managers into the program, so the majority of hiring was for care managers. The biggest change in practice staffing since the 2012 site visit was that care managers were largely hired, trained, and working with patients. In 2012, most care managers we had only been trained recently and embedded in practices for a short time. At the 2013 site visit, 433 care managers were trained, embedded in practices, and in contact with patients.

Practices and physician organizations had discretion in how care managers were hired and deployed. By 2013, most physician organizations and practices had hired and trained their full complement of care managers and were putting them to work. In required MiPCT activity reports and documentation, physician organizations reported that 55 percent of care managers were employed by physician organizations, 22 percent were employed by practices, and 23 percent were employed by health systems. Physician organizations also documented that 70 percent of care managers worked with only one practice; 23 percent worked with two, three, or four practices; and 7 percent worked with five or more practices. In a separate survey conducted by MPH, care managers self-reported working with an average of 8.4 physicians.

Care managers reported that they had about five patient contacts per day (Tanner, 2013a). When divided by role, moderate care managers reported about six visits per day, hybrid care managers reported five visits per day, and complex care managers reported five visits per day. Although care managers reported that they continued to build their caseloads, the low numbers of patients actually reached by care managers was a concern. As of September 2013, care managers were actively seeing 22,237 of total patients in MiPCT practices (Tanner, 2013b).

**Health information technology.** In 2013, virtually all practices continued to use, upgraded to, or transitioned to full EHRs. The sophistication and functionality of the EHRs varied across practices. Some large integrated systems had EHRs that linked patient records and data across inpatient care, outpatient primary care, and specialty practices; most EHRs, however, were not that comprehensive. Most practices continued to receive communications from hospitals and specialists by fax, which were then scanned into the EHRs.

Practices reported general satisfaction with their EHRs, which allowed them to track information on laboratory tests and preventive care for most patients. While practices reported using their EHRs to generate reports about preventive services and evidence-based medicine, few practices reported using this information systematically to follow up and ensure these services were being provided. Several practices said that this was on their agenda for the coming year. Few practices reported connections between their EHRs and the statewide electronic HIE.

Care managers reported varying access to practices' EHRs. According to the MPHI survey of care managers, most care managers (62%) were allowed to both retrieve and enter information, but others did not have access to EHRs (Tanner, 2013a). Some care managers used the EHR as their main way to communicate with doctors and other practice clinicians, documenting their activities directly into the EHR. Others left written reports for the doctors to approve and enter into the EHR themselves.

Patient portals into the EHRs were mainly a work in progress. A few practices reported having functional patient portals, which allowed patients to access their records and make appointments. Most practices still had it on their wish list and planned to implement a patient portal in the coming year.

All but one practice had patient registries; some were free-standing software packages and others were components of their EHRs. In most cases, the registries were disease-focused, with diabetes and hypertension the leading diagnoses tracked. Most practices reported that the registries served only as a reporting tool, since they were required for participation in MiPCT, and, in many cases, their EHRs provided the same or better information. As a result, these practices used their EHRs instead of the registry reporting for monitoring preventive services and compliance with evidence-based medicine.

In general, practices gave their EHRs positive ratings for improving the care they delivered to patients, though most practices mentioned a steep learning curve in transitioning to EHRs or adding new modules. Several physicians also mentioned the high costs of EHRs and of adding new modules, such as a patient portal. Several practices mentioned the difficulty of incorporating care management documentation into their existing EHR system. Virtually all practices expected to use EHRs to coordinate and improve the quality of care in the coming year.

### **9.2.2 Technical Assistance**

Practices we interviewed mentioned two types of technical assistance received through MiPCT: training sessions of various types and data analytics, such as dashboards.

The state and local physician organizations provided various types of educational and training programs, ranging from physician engagement dinners to webinars to learning collaboratives. A total of 32 practices, fewer than 10 percent, participated in the MiPCT-led learning collaboratives in 2013. Some practices felt it was time well spent, with one commenting that it was helpful to meet and share information with other practices' staff. Others felt the level of discussion was too elementary. Doctors and care managers also expressed concern that some of the technical assistance required too much time away from the practice. One state official mentioned that physician engagement dinners, where clinical topics and the MiPCT program were discussed, were popular among doctors, and a few doctors mentioned them favorably. Others did not find them helpful or did not attend.

Care managers had varying opinions on the webinars sponsored by MiPCT or their physician organization. Some found them useful, with several care managers singling out training on obesity as interesting. Several mentioned that the resources for patients introduced in the webinars were helpful and that they had used these resources with their patients. A few found webinars not worth the time invested. Many care managers said there were far more learning activities available than they had time to attend.

MiPCT provided their own data dashboards to the physician organizations, compiled by the Michigan Data Collaborative. At the time of our site visit, MiPCT was not using the practice feedback reports produced by RTI, but efforts were underway to disseminate those reports to the practices.

Data dashboards received a mixed response from physician organizations and practices. State officials noted that the dashboards often were not transmitted by the physician organizations to the practices. Some physician organizations stated that they had transmitted the dashboards to practices, but that they were not received favorably. Some practices had not seen the dashboards; others had seen them, but dismissed them as not helpful. The major criticism of the dashboards was that the data were often 6 months old or older and, thus, not helpful in the management of individual patients. Other practices, however, said that dashboard data were useful as a report card; the data were shared with practice staff to monitor their progress. Another example of dashboard use was identifying patients who were frequent ER users, so they could be targeted for intervention.

### **9.2.3 Payment Support**

Practices and physician organization staff reported that most practices were using payments to cover care management staff, develop staff, pay for support staff to reduce the administrative burden on care managers, support infrastructure developments, and provide care managers with additional resources and training. Some practices reported putting the additional revenues into general receipts and hoping that it all came out well in the end.

One financial change that occurred in 2013 was the addition of Priority Health as a participant in MiPCT. In the western part of the state, Priority Health patients were the largest proportion of commercially insured patients, and providers believed the addition of Priority would be beneficial to both practices and the patients, allowing the expansion of care management to many more patients.

Numerous practices reported that their major goal was just to break even with the payment supports associated with the program. They often described MiPCT as an opportunity to improve quality rather than to increase revenue. That said, concerns were expressed about whether the payments were enough to pay for the added services being provided. One physician organization staff member commented that there was frustration that they were asked to provide extensive support to practices, but did not receive greater payments.

Among practice and physician organization respondents familiar with the project's payment schemes, some said payments were not adequate; others felt they were adequate at the time, but would not be sustainable in the future because of the increasing complexity of medical home implementation and demand for medical home services. As during the 2012 site visit, respondents from some practices expressed frustration that the program was multi-payer, not all-payer, limiting both the payments and the services that could be delivered. Some respondents were dissatisfied with the varying methods of payment from the different payers for care management services (PMPM payments vs. FFS payments based on billing codes [G and CPT codes]). Several practice and physician organization representatives saw the PMPM model as superior to the FFS model because it provided a consistent revenue stream and they felt that continuing the program would be difficult under a FFS model.

Specific billing problems, mainly with the BCBSM and Blue Care Network G-codes, were reported less frequently than during the 2012 site visit, and the BCBSM and Blue Care Network was credited by some physicians with educating practices on how to improve their billings.

Physician organizations had some latitude in deciding how incentive payments were distributed to the practices, and substantial variation in how they distributed the incentive payments persisted. Some physician organizations reported passing all of the MiPCT payments through to the practices, while others kept some of the payments for administrative services. One physician organization reported asking practices to give some of the MiPCT money they received back, because care manager expenses were higher than expected.

#### **9.2.4 Discussion of Practice Transformation**

During Year Two, MiPCT focused primarily on recruiting, hiring, training, and embedding 433 care managers across the state. A key issue was whether care managers would be able to reduce unnecessary utilization and costs.

Nearly all Michigan care managers worked on care transitions (often triggered by receipt of an ADT (Admission-Discharge-Transfer) alert and chronic disease management. Despite some bumps along the way, virtually all practices were pleased with the results their care managers had achieved and offered many anecdotes about their success in patient education and care coordination. Care managers, however, were only seeing about 2 percent of patients, raising

questions about whether their penetration was sufficient to have an impact on utilization and expenditures.

### **9.3 Quality of Care, Patient Safety, and Health Outcomes**

#### **9.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

The main quality improvement/patient safety activity reported by most care managers during the 2013 site visit was medication reconciliation. This was performed regularly in conjunction with ADT care management and also commonly by many care managers and practices at outpatient visits for patients with multiple chronic diseases. Medications were checked for duplications or omissions and compared to the list of medications in the patient's EHR. This was especially important when patients had seen a specialist or visited the ER, as new medications duplicative of current medications may have been prescribed.

As part of their work, some care managers reported following care guidelines for specific diseases, most commonly diabetes. A major part of their work was instructing patients on self-management with the aim of improving compliance with medications and diet in to lower hemoglobin A1c levels. Some practices used their EHRs or electronic disease registries to monitor disease-specific quality of care metrics in areas such as diabetes and asthma, but this did not result consistently in outreach or follow up to patients.

Improving the delivery of clinical preventive services (screening tests, immunizations, and counseling to change health behaviors such as smoking) was not as high of a priority as other activities. Some practices reported using their registries or EHRs to track patient preventive care at the time of appointments, but few reported using these methods systematically to identify and contact patients outside the office. Several practices and care managers said this would be a focus in the coming year.

#### **9.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes**

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization measures. The results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in *Section 9.3.3*.

**Process of care measures.** *Table 9-5* reports covariate-adjusted differences in several process measures that indicate quality of care across MiPCT and two comparison groups: PCMHs and non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures that address whether beneficiaries received all four of the recommended actions in diabetes care or none of the quality actions, respectively. The last indicator, on whether a beneficiary received a total lipid panel, follows the care guidance for patients with ischemic vascular disease (IVD).

**Table 9-5**  
**Michigan: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 41,111)	-0.54	[-3.35, 2.27]	1.49*	[0.52, 2.46]
Year Two (N = 23,837)	-0.04	[-3.28, 3.20]	0.50	[-0.77, 1.78]
Overall (N = 42,853)	-0.36	[-3.25, 2.53]	1.13*	[0.20, 2.06]
Retinal eye examination				
Year One (N = 41,111)	-1.39	[-3.20, 0.41]	-0.56	[-2.96, 1.83]
Year Two (N = 23,837)	0.10	[-2.68, 2.87]	0.53	[-2.44, 3.49]
Overall (N = 42,853)	-0.85	[-2.60, 0.90]	-0.17	[-2.35, 2.02]
LDL-C screening				
Year One (N = 41,111)	-1.98*	[-3.82, -0.14]	-1.33	[-5.12, 2.45]
Year Two (N = 23,837)	2.37	[-1.42, 6.16]	-1.02	[-5.30, 3.25]
Overall (N = 42,853)	-0.39	[-2.52, 1.73]	-1.22	[-5.12, 2.68]
Medical attention for nephropathy				
Year One (N = 41,111)	-1.24	[-4.58, 2.10]	0.38	[-1.80, 2.55]
Year Two (N = 23,837)	1.39	[-3.42, 6.19]	1.35	[-3.13, 5.82]
Overall (N = 42,853)	-0.28	[-3.96, 3.40]	0.73	[-2.04, 3.50]
Received all 4 diabetes tests				
Year One (N = 41,111)	-0.65	[-3.63, 2.32]	-0.60	[-3.55, 2.36]
Year Two (N = 23,837)	1.90	[-3.27, 7.07]	0.99	[-4.02, 6.01]
Overall (N = 42,853)	0.28	[-3.29, 3.85]	-0.02	[-3.35, 3.32]
Received none of the 4 diabetes tests				
Year One (N = 41,111)	0.62*	[0.01, 1.22]	-0.05	[-0.55, 0.46]
Year Two (N = 23,837)	-0.46	[-1.67, 0.76]	-0.06	[-0.71, 0.60]
Overall (N = 42,853)	0.23	[-0.47, 0.92]	-0.05	[-0.49, 0.39]
Total lipid panel				
Year One (N = 65,690)	-2.28*	[-4.49, -0.07]	-2.13*	[-3.95, -0.32]
Year Two (N = 41,939)	-0.17	[-3.94, 3.59]	-0.92	[-3.87, 2.03]
Overall (N = 73,257)	-1.47	[-3.87, 0.94]	-1.66	[-3.74, 0.41]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique MiPCT participants eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

We examine the probability of receiving the recommended services. These dichotomous (yes/no) indicators are modeled using logistic regression models. Estimates in **Table 9-5** are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care while a *positive* value corresponds to an *increase* in the likelihood. MiPCT beneficiaries are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that MiPCT is associated with an increase in the likelihood that MAPCP Demonstration beneficiaries received **HbA1c testing** by 1.13 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.

**Preventable hospitalization measures.** Aside from studying processes of care, largely based on evidence-based guidelines, we also evaluated patient outcomes among MiPCT and comparison practices. Some patient medical events, such as those measured with prevention quality indicators (PQIs), may be preventable with adequate access to high-quality primary care services. We define avoidable catastrophic events as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, chronic obstructive pulmonary disease or asthma in older adults, asthma in younger adults, hypertension, and congestive heart failure. The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 9-6** reports covariate-adjusted differences in these patient outcome measures.

We examine differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters in **Table 9-6**. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If MiPCT is associated with improvements in the quality and access to ambulatory care, we expect MiPCT beneficiaries to have reduced rates (i.e., a significant negative value) of these avoidable hospitalizations.

**Table 9-6**  
**Michigan: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 226,872)	-1.01	[-2.38, 0.36]	-0.46	[-1.04, 0.12]
Year Two (N = 228,788)	-1.33*	[-2.64, -0.01]	-0.57	[-1.52, 0.38]
Overall (N = 267,526)	-1.17	[-2.45, 0.11]	-0.52	[-1.21, 0.18]
PQI admissions—overall <sup>2</sup>				
Year One (N = 226,872)	-0.97	[-2.22, 0.27]	-0.21	[-1.08, 0.66]
Year Two (N = 228,788)	-1.04	[-2.24, 0.15]	-0.66	[-1.72, 0.40]
Overall (N = 267,526)	-1.01	[-2.10, 0.08]	-0.44	[-1.29, 0.42]
PQI admissions—acute <sup>3</sup>				
Year One (N = 226,872)	0.12	[-0.32, 0.56]	-0.61*	[-1.19, -0.02]
Year Two (N = 228,788)	-0.13	[-0.83, 0.57]	-0.69	[-1.51, 0.13]
Overall (N = 267,526)	-0.01	[-0.49, 0.48]	-0.65	[-1.30, 0.00]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 226,872)	-1.02	[-2.20, 0.16]	0.35	[-0.22, 0.92]
Year Two (N = 228,788)	-0.85	[-1.90, 0.19]	-0.02	[-0.63, 0.60]
Overall (N = 267,526)	-0.94	[-1.97, 0.09]	0.16	[-0.33, 0.66]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend towards decreasing the rate of **avoidable**

**catastrophic events** among demonstration beneficiaries, though the *overall* estimate is not statistically significant.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, there were no statistically significant *overall* estimates indicating that MiPCT is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** for demonstration beneficiaries.

### **9.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes**

MiPCT provided financial incentives to participating practices that achieved specified quality of care, patient safety, and health outcomes. These MiPCT measures became less process- and more outcome-oriented in Year Two compared to Year One. In Years One and Two, care managers and the measures focused on improving care for people with diabetes. In particular, care managers provided substantial amounts of patient education regarding the disease. During Year One, care managers were just being hired and trained and had low caseloads, and they did not see many patients during Year Two. Thus, the quantitative analyses over the first 2 years largely represented the demonstration in its start-up and early implementation phases.

With one exception, the diabetes-related quality measures for the MiPCT practices were not statistically different from the comparison groups. MiPCT beneficiaries with diabetes exhibited a statistically significant increase in the likelihood of receiving an HbA1c test compared to non-PCMH comparison group practices, driven largely by the changes in Year One.

There were a few isolated favorable results for preventable hospitalization outcomes among MiPCT practices, with a significant decrease in the rate of avoidable catastrophic events in Year One compared to PCMH practices and acute PQI admissions relative to non-PCMH practices. Differences in the chronic and overall PQI admission rates relative to non-PCMH practices were not significant. Most conditions counted in the preventable hospitalization metrics resulted from exacerbation of long-standing risk factors for heart disease and diabetes that could not be addressed easily in a short time period; moreover, MiPCT care management was just getting established in Year One. During the Year Two site visit, care managers reported that they had not worked extensively with patient registries to increase use of preventive care services and, as already noted, did not work with a large number of patients.

## **9.4 Access to Care and Coordination of Care**

### **9.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two**

Most practices had implemented expanded office hours, same-day appointments, and 24/7 access to a clinical decision maker in the first year of the program; they continued these activities in 2013.

A growing area of focus in 2013 was providing access to other community resources for patients with complex psychosocial needs in addition to their chronic conditions. Many care managers commented that providing this link was one of their most important roles. Patients, they said, benefitted from services such as transportation to appointments, Meals on Wheels,

support groups, and mental health services. One care manager spoke of the importance of arranging simple things, such as transportation, that improved access to care for some patients.

One practice contended that their patients always had adequate access to care. Now, however, their care managers focused on assisting patients in navigating the system, so that they could access care *appropriately*, for example, using the physicians' office instead of the ER and coming in for needed preventive care.

All practices, physician organizations, and care managers identified coordination of care as a major goal and accomplishment of care managers. In dealing with moderate (chronic disease) cases, the care managers provided self-management education, but they also coordinated care among health care settings, made follow-up calls, and reconciled medications. There was variation among practices in how much emphasis was placed on this care coordination for moderate patients. All saw it as vital, but some practices identified it as an area in which they hoped to do more in the future, since their emphasis at the time was on self-management education.

A major goal of complex care management—quickly and efficiently coordinating transitions in care—was improving outcomes and decreasing costs. Effective coordination of care depended on the care manager receiving notification of these events as soon as possible. While some physician organizations, practices, and care managers reported that they relied on faxes from hospitals for notification, more practices reported that they now rely on EHRs more than they did last year. Those relying on EHRs received timely notification when patients were admitted or discharged from a hospital affiliated with the same health system as the practice, but not when patients were admitted to or discharged from hospitals affiliated with different systems.

The 2013 partnership between MiPCT and MiHIN, the statewide HIE, created a platform for care managers to receive electronic ADT (Admission-Discharge-Transfer) alerts for patients in their practices. MiPCT also worked with the health systems to provide protected access to clinical record information when a care manager received an alert. The intent was to broaden the pool of hospitals from which practices receive 'near real time' notifications of hospitalizations, discharges, and ER visits. One state official said, "Right now, they [practices] get notified 10 to 20 percent of the time, and we are working to get them up to 80 to 90 percent and then to 100 percent."

The MiPCT-MiHIN partnership built on a 20-physician/one-hospital pilot project implemented by MiHIN in November 2012. At the time of the 2013 site visit, a major expansion of this pilot was in production testing. The expansion was launched with one participating physician organization in December 2013, with the goal that care managers in 17 physician organizations participating in MiPCT would receive ADT notifications for their patients from hospitals affiliated with three participating health systems (Beaumont, Henry Ford Health System, and Trinity) in subsequent months. MiPCT paid for the notification service for these physician organizations and engaged CareBridge (a nonprofit organization that supports care management) to distribute notifications to the appropriate care managers. The notification included the patient's name and other information intended to help the care manager act on the notice, such as date of admission, hospital, and discharge disposition. MiPCT also worked with participating practices to help them incorporate this new information into the care management workflow within each office, so that it would be acted on promptly and consistently. As of the 2013 site visit, MiHIN anticipated that this service would eventually grow to a statewide system.

#### 9.4.2 Changes in Access to Care and Coordination of Care

Our evaluation of the MAPCP Demonstration and access to and coordination of care addresses whether MiPCT was associated with changes in the utilization of primary care services and specialist services, and with enhanced coordination of care for Medicare beneficiaries. **Table 9-7** below reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across MiPCT practices and two comparison groups: PCMHs and non-PCMHs. The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 9.4.3**.

The first four measures address utilization of primary care and specialist services. MiPCT beneficiaries are expected to increase their utilization of primary care services and decrease utilization of specialist services relative to comparison group beneficiaries after the start of the MAPCP Demonstration. We examined the quarterly rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall visit rate, for example, if participation in the MAPCP Demonstration is associated with reductions in both primary care and specialist visit rates, we also analyzed the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. Having a higher percentage indicates greater use of primary care services relative to specialist services. MiPCT beneficiaries are expected to have higher percentages of primary care visits.

We analyzed two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. MiPCT practices are expected to increase the follow-up visit rate and reduce the unplanned readmission rate.

Finally, we assessed continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plan. The value of the continuity of care index, which is measured annually, ranges from 0 to 1. MiPCT beneficiaries are expected to have higher values on the continuity of care index.

With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high

continuity of care. MiPCT beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile.

**Table 9-7**  
**Michigan: Comparison of average change estimates for access to care and coordination of**  
**care:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence Interval	Average estimate	90% confidence Interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 226,872)	51.03	[-11.43, 113.49]	28.75*	[0.86, 56.64]
Year Two (N = 228,788)	-58.64	[-118.83, 1.56]	-21.85	[-56.82, 13.11]
Overall (N = 267,526)	-4.29	[-60.38, 51.80]	3.23	[-24.57, 31.02]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 226,872)	4.11	[-29.10, 37.32]	5.42	[-16.40, 27.25]
Year Two (N = 228,788)	-63.89*	[-107.49, -20.28]	-19.01	[-59.06, 21.04]
Overall (N = 267,526)	-30.19	[-66.77, 6.39]	-6.90	[-35.57, 21.77]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 226,872)	-0.04	[-8.10, 8.03]	8.32*	[0.48, 16.17]
Year Two (N = 228,788)	-5.67	[-19.20, 7.86]	9.83	[-0.51, 20.18]
Overall (N = 267,526)	-2.88	[-13.34, 7.59]	9.08*	[0.29, 17.88]
Primary care visits as percentage of total visits (higher quintile = larger percentage)				
Year One (N = 194,753)				
1st quintile	-0.55	[-2.31, 1.20]	0.53	[-0.66, 1.71]
5th quintile	0.36	[-0.76, 1.48]	-0.35	[-1.15, 0.45]
Year Two (N = 136,211)				
1st quintile	-2.39*	[-4.71, -0.07]	-0.10	[-2.37, 2.18]
5th quintile	1.35*	[0.10, 2.60]	0.06	[-1.32, 1.44]
Overall (N = 210,645)				
1st quintile	-1.30	[-3.09, 0.49]	0.27	[-1.22, 1.77]
5th quintile	0.76	[-0.30, 1.82]	-0.19	[-1.13, 0.76]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 32,059)	21.48	[-11.48, 54.44]	25.78*	[4.45, 47.11]
Year Two (N = 31,078)	12.48	[-23.01, 47.96]	28.63*	[0.81, 56.44]
Overall (N = 55,095)	17.06	[-13.10, 47.23]	27.18*	[5.10, 49.25]

(continued)

**Table 9-7 (continued)**  
**Michigan: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 38,250)	-46.89*	[-76.50, -17.28]	-4.92	[-18.53, 8.68]
Year Two (N = 37,350)	-11.66	[-32.00, 8.68]	-3.93	[-22.54, 14.67]
Overall (N = 64,799)	-29.55*	[-52.85, -6.25]	-4.44	[-19.23, 10.35]
Continuity of care index (higher quintile = better continuity of care)				
Year One (N = 226,051)				
1st quintile	-0.25	[-2.46, 1.95]	-1.66*	[-3.03, -0.30]
5th quintile	0.22	[-1.67, 2.10]	1.37*	[0.30, 2.43]
Year Two (N = 159,619)				
1st quintile	-2.83*	[-5.01, -0.65]	-1.35	[-2.97, 0.27]
5th quintile	2.25*	[0.66, 3.83]	1.13	[-0.17, 2.43]
Overall (N = 238,999)				
1st quintile	-1.30	[-3.31, 0.71]	-1.54*	[-2.84, -0.24]
5th quintile	1.04	[-0.58, 2.67]	1.27*	[0.24, 2.30]

**NOTES:**

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique MiPCT participants eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend towards decreasing the rate of **medical specialist visits** among demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that MiPCT is associated with an increase in the rate of **surgical specialist visits** among demonstration beneficiaries by 9.08 per 1,000 beneficiary quarters. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimates suggest a trend toward an increase in primary care visits as a share of total visits. Specifically, in Year Two the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's primary care visits as percent of total visits was in the lower quintile and an increase in the likelihood that it was in the upper quintile. The upper quintile represents beneficiaries who had the highest percentage of visits in the primary care setting while the lower quintile represents beneficiaries who had the lowest percentage of visits in the primary care setting.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that MiPCT is associated with an increase in the rate of **follow-up visits within 14 days of discharge** among demonstration beneficiaries by 27.18 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that MiPCT is associated with an increase in the rate of **30-day unplanned readmissions** among demonstration beneficiaries by 29.55 per 1,000 beneficiary quarters. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimates suggest a trend toward an increase in continuity of care, as measured by concentration of visits, though the *overall* estimates are not statistically significant. Specifically, in Year Two the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimates indicates that MiPCT is associated with an increase in continuity

of care, as measured by concentration of visits. Specifically, MiPCT is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers. The lack of statistical significance in Year Two, however, makes it uncertain whether these associations would persist into Year Three.

#### **9.4.3 Discussion of Access to Care and Coordination of Care**

While there were a few quantitative outcomes showing an association between MiPCT and access and coordination of care, most measures were not statistically significant. Those that were significant appeared only in certain years and relative to one comparison group and not the other, so the overall association with MiPCT's efforts remains uncertain. With regard to access, from the start of the initiative, MiPCT focused on increasing access to primary care by extending office hours and increasing the percentage of a practice's schedule that could be filled by same-day appointments. While there is some evidence that beneficiaries assigned to MiPCT practices in Year One had significantly more primary care visits per 1,000 beneficiary quarters relative to the comparison group of non-PCMH practices, no difference is found in Year Two or overall. Year One findings also drive the overall significantly greater number of surgical specialty visits for MiPCT-assigned beneficiaries relative to beneficiaries receiving care from non-PCMH practices, which was not expected because of the emphasis placed by PCMHs on reducing unnecessary specialty care. In Year Two, relative to PCMH practices in the comparison group, there was an increase in primary care visits as a percentage of total visits, and a lower number of medical specialist visits per 1,000 beneficiary quarters, for beneficiaries assigned to MiPCT practices. Despite these findings for particular years, most differences related to access are not statistically significant.

With regard to care coordination, quantitative measures support the qualitative findings that MiPCT care managers focused on follow-up with patients after hospital discharge. Although care managers did not have contact with a large percentage of patients, they may have focused more on patients who had been hospitalized, given the focus of MiPCT training on care transitions in Year One. These efforts are associated with some of the desired results: beneficiaries assigned to MiPCT practices that were discharged had more follow-up visits scheduled within 14 days of discharge relative to the non-PCMH comparison group in both Years One and Two. The overall decrease in the rate of 30-day unplanned readmissions for MiPCT beneficiaries relative to PCMH comparison group beneficiaries is driven by a significant decrease in Year One, but not in Year Two thus, the mechanism by which this occurred is not clear.

## **9.5 Beneficiary Experience with Care**

### **9.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

MiPCT implemented several initiatives designed to improve patient experience with care. During the second year, the project established a Patient Advisory Group to obtain patient input on current and future initiatives. In addition, practices focused more on disease self-management, patient education, and providing educational resources to patients, especially those with diabetes. These functions were a key component of the care manager's role. Care managers offered patients a set of options that allowed them to make their own decisions about what would work best for them. Care managers also helped patients navigate the complex medical neighborhood.

During the site visit, interviewees, especially care managers, consistently reported that MiPCT improved the patient experience with care, especially for people with diabetes. Care managers reported that patients appreciated their work and were more engaged in their own care.

Patients also reported being happy that someone, such as a care manager, was taking sustained interest in them and not limiting their interaction to what took place during a short physician visit. As one care manager put it, "A lot of people are impressed, like, 'Wow, I never even thought this would happen; I never thought you guys would go out of your way like you are.' So I do think patients are a lot happier with having access to our care manager." Moreover, as one care manager said:

The patients that are engaged are extremely thankful for having someone sit down and educate them, especially the diabetic patients who were diabetics for 5, 10, 15 years and never had the education or don't remember the education that was told to them previously. ... It's just a matter of getting people to understand and to see that I'm not here to tell them what to do. I'm here to help them navigate through the system so that they can stay as healthy as they can be.

### **9.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between MiPCT and changes in beneficiary experience with care are not yet available. In the Final Report, we will report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

## **9.6 Effectiveness (Utilization & Expenditures)**

### **9.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures During Year Two**

Michigan expected most of the cost savings under MiPCT to come from reducing service use among high users of health care services and by reducing overall use of hospital and ERs—especially readmissions and ambulatory-care-sensitive ER visits and inpatient stays. Through quality improvement efforts, they also expected to move to a lower-cost procedure mix. To achieve budget neutrality, MiPCT expected to reduce medical admissions by 3.1 percent, readmissions by 1.2 percent, and ER visits by 2.6 percent in the Medicare population. These

estimates were based on BCBSM's experience with PGIP (Michigan Department of Community Health, 2010).

Reductions in medical care use by high medical care users were considered low-hanging fruit. The primary tool for decreasing use in this population was complex care management. Improved access to care through open access and 24/7 access to a clinical decision maker was expected to reduce ER utilization and ambulatory-care-sensitive hospital admissions.

MiPCT's focus was, however, broader than high-cost patients. While complex care managers were seen as the primary mechanism for achieving short-term cost savings, the eventual goal was population health management and across-the-board risk reduction and health improvement for all patients, including those who are healthy. Transformed primary care and moderate care management, with its focus on disease management and self-management support, were expected to reduce health care utilization and costs by keeping patients from developing chronic illnesses and by reducing the severity of disease for those who had them.

During the second site visit, many interviewees (mostly care managers) provided anecdotes about patients to demonstrate that MiPCT had prevented potentially avoidable ER and hospital use. For example, one care manager recounted how she helped a patient with hypertension avoid a trip to the ER:

We teach them if their blood pressure is... 160/90 or higher and symptomatic, [they] should contact me immediately... He called to say that he wasn't feeling well, his blood pressure was high, and he was lightheaded and dizzy. He said, "I think I need to go to the ER." I said, "You need to come to the clinic ... We'll bring you right in and give you medication right in the clinic. If we can address your issue, we will." When he arrived, I went out to meet him in the lobby—he was really pleased.

In another example, a care manager described a patient who "used to visit all the emergency rooms looking for pain relief," and said, "Since my involvement, she's not had one emergency room visit in four months.... She's had a real mistrust of health care providers and she said I'm the first one she's begun to trust."

## 9.6.2 Changes in Utilization and Expenditures

**Tables 9-8** and **9-9** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between MiPCT and two comparison groups: PCMHs and non-PCMHs. **Table 9-8** contains measures of total expenditures as well as specific categories of expenditures that are expected to be affected by the MiPCT implementation. Estimates in this table are interpreted as the difference in the rate of growth in per beneficiary per month (PBPM) expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. It is expected that MiPCT would reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether MiPCT is associated with the intended utilization changes in these care categories, we analyze acute-care, post-acute-care, ER, specialty physician, and imaging expenditures. We also analyze changes in all-cause admissions and ER visits not leading to hospitalization measured as rates per 1,000 beneficiary quarters. **Table 9-9** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause

admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, and a *positive* value corresponds to an *increase* in the rate of events.

MiPCT is also expected to result in higher utilization of certain types of services. In particular, the demonstration is expected to increase the utilization of primary care, home-based care, and outpatient services (including care received at hospital outpatient departments, FQHCs, and RHCs). These services are captured in our measures of primary care provider expenditures, home health expenditures, and outpatient expenditures. Positive regression coefficients indicate that MiPCT is associated with the expected increase in the use of these services.

As noted above, MiPCT is expected to decrease the use of some services, while increasing the use of others. Overall, the MAPCP Demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyze average overall Medicare PBPM expenditures and look for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in ***Section 9.6.4***.

**Table 9-8**  
**Michigan: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 226,872)	-53.03*	[-105.79, -0.27]	-13.29	[-39.12, 12.53]
Year Two (N = 228,788)	-113.29*	[-183.01, -43.58]	-20.81	[-54.42, 12.79]
Overall (N = 267,526)	-83.43*	[-140.25, -26.61]	-17.09	[-44.19, 10.02]
Acute-care				
Year One (N = 226,872)	-28.23*	[-55.34, -1.12]	-6.52	[-20.48, 7.44]
Year Two (N = 228,788)	-48.99*	[-79.17, -18.80]	-8.65	[-26.85, 9.56]
Overall (N = 267,526)	-38.70*	[-65.87, -11.52]	-7.59	[-22.38, 7.19]
Post-acute-care				
Year One (N = 226,872)	-12.74	[-27.13, 1.65]	-8.68	[-18.67, 1.32]
Year Two (N = 228,788)	-24.47	[-50.18, 1.23]	-11.95*	[-22.71, -1.19]
Overall (N = 267,526)	-18.66*	[-36.48, -0.84]	-10.33*	[-19.98, -0.67]
ER visits not leading to hospitalization				
Year One (N = 226,872)	-1.17	[-2.65, 0.31]	0.06	[-0.89, 1.01]
Year Two (N = 228,788)	-1.17	[-3.16, 0.81]	-0.77	[-2.26, 0.72]
Overall (N = 267,526)	-1.17	[-2.72, 0.38]	-0.36	[-1.39, 0.67]
Outpatient				
Year One (N = 226,872)	0.82	[-7.93, 9.58]	9.24*	[3.57, 14.90]
Year Two (N = 228,788)	-6.50	[-16.51, 3.51]	10.99*	[6.41, 15.56]
Overall (N = 267,526)	-2.87	[-11.83, 6.09]	10.12*	[5.43, 14.81]
Specialty physician				
Year One (N = 226,872)	-8.05*	[-15.72, -0.37]	-3.42	[-7.70, 0.86]
Year Two (N = 228,788)	-16.25*	[-23.03, -9.46]	-5.99*	[-11.00, -0.98]
Overall (N = 267,526)	-12.18*	[-19.08, -5.29]	-4.72*	[-8.98, -0.45]
Primary care physician				
Year One (N = 226,872)	-1.29	[-5.09, 2.51]	-0.58	[-2.71, 1.55]
Year Two (N = 228,788)	-9.44*	[-17.02, -1.86]	-3.05*	[-5.55, -0.54]
Overall (N = 267,526)	-5.40*	[-10.58, -0.22]	-1.83	[-3.96, 0.31]
Home health				
Year One (N = 226,872)	0.25	[-3.94, 4.44]	0.10	[-2.49, 2.68]
Year Two (N = 228,788)	-3.38	[-8.70, 1.94]	0.68	[-1.85, 3.22]
Overall (N = 267,526)	-1.58	[-6.10, 2.94]	0.39	[-1.89, 2.67]
Other non-facility				
Year One (N = 226,872)	-0.60	[-2.41, 1.20]	0.39	[-0.76, 1.53]
Year Two (N = 228,788)	-2.24	[-4.75, 0.26]	0.43	[-0.96, 1.82]
Overall (N = 267,526)	-1.43	[-3.41, 0.55]	0.41	[-0.73, 1.55]

(continued)

**Table 9-8 (continued)**  
**Michigan: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Laboratory				
Year One (N = 226,872)	-0.69	[-2.04, 0.67]	-1.53*	[-2.57, -0.50]
Year Two (N = 228,788)	-1.79	[-3.64, 0.06]	-2.43*	[-4.60, -0.26]
Overall (N = 267,526)	-1.24	[-2.79, 0.30]	-1.98*	[-3.54, -0.43]
Imaging				
Year One (N = 226,872)	0.22	[-0.86, 1.30]	-0.19	[-1.14, 0.75]
Year Two (N = 228,788)	-1.56*	[-2.96, -0.16]	-0.31	[-1.70, 1.08]
Overall (N = 267,526)	-0.68	[-1.85, 0.49]	-0.25	[-1.36, 0.86]
Other facility				
Year One (N = 226,872)	-1.91	[-5.23, 1.42]	0.13*	[0.03, 0.24]
Year Two (N = 228,788)	-0.69	[-2.13, 0.75]	0.25	[0.00, 0.50]
Overall (N = 267,526)	-1.29	[-3.66, 1.07]	0.19*	[0.03, 0.36]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique MiPCT participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of change in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$83.43 slower among demonstration beneficiaries in MiPCT practices relative to beneficiaries in PCMH practices. Relative to beneficiaries in non-PCMH practices, there was no statistically significant difference in the *overall* growth of **total Medicare expenditures**.
- The *overall* growth in **acute-care expenditures** is \$38.70 slower among beneficiaries in MiPCT practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **post-acute-care expenditures** is \$18.66 slower relative to beneficiaries in PCMH practices. The lack of statistical significance in Year One and Year Two, however, makes it uncertain whether this association would be present in Year Three.

- The *overall* growth in **post-acute-care expenditures** is \$10.33 slower relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **outpatient (including FQHCs) expenditures** is faster among beneficiaries in MiPCT practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **expenditures for specialty physicians** is slower among beneficiaries in MiPCT practices relative to beneficiaries in both PCMH and non-PCMH practices.
- The *overall* growth in **expenditures for primary care physicians** is \$5.40 slower among beneficiaries in MiPCT practices relative to beneficiaries in PCMH practices. Relative to beneficiaries in non-PCMH practices, a negative estimate in Year Two suggests a potential trend toward slower growth in **expenditures for primary care physicians**, though the *overall* estimate is not statistically significant.
- The *overall* growth in **laboratory expenditures** is slower among beneficiaries in MiPCT practices relative to beneficiaries in non-PCMH practices.
- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **imaging expenditures** among beneficiaries in MiPCT practices, though the *overall* estimate is not statistically significant.
- The *overall* growth in **other facility expenditures** is faster among beneficiaries in MiPCT practices relative to beneficiaries in non-PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this trend would persist into Year Three.

**Table 9-9**  
**Michigan: Comparison of average change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 226,872)	-6.45*	[-11.07, -1.82]	-1.30	[-4.44, 1.84]
Year Two (N = 228,788)	-9.53*	[-13.56, -5.49]	-1.08	[-5.17, 3.01]
Overall (N = 267,526)	-8.00*	[-12.03, -3.96]	-1.19	[-4.49, 2.11]
ER visits not leading to hospitalization				
Year One (N = 226,872)	-0.04	[-5.33, 5.24]	1.99	[-2.73, 6.71]
Year Two (N = 228,788)	5.28*	[0.72, 9.83]	2.91	[-0.95, 6.77]
Overall (N = 267,526)	2.64	[-1.75, 7.03]	2.45	[-1.38, 6.29]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that MiPCT is associated with a decrease in the rate of **all-cause admissions** among demonstration beneficiaries by 8.00 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend toward increasing the rate of **ER visits not leading to a hospitalization** among demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.

### 9.6.3 Medicare Budget Neutrality in Year Two of MiPCT

#### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention, excluding demonstration-related Medicare fees. Estimates of gross savings for Michigan through Year Two of the demonstration are based on the sum of eight quarter-specific cost regression coefficients comparing beneficiaries attributed to MAPCP Demonstration practices to beneficiaries attributed to PCMH comparison practices. Negative cost estimates

denote savings, as the growth in MAPCP Demonstration costs was smaller than in the comparison group. Positive cost estimates denote losses, as the growth in MAPCP Demonstration costs exceeded that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares, with the beneficiary-quarter as the unit of analysis.

### **MAPCP Demonstration Fees**

In the MAPCP Demonstration, CMS is paying monthly medical home fees to MiPCT practices for Medicare-assigned demonstration beneficiaries, a portion of which goes to their physician organizations. CMS also makes monthly payments for MiPCT program management.

Total monthly fees paid by Medicare were aggregated to the quarter level from claims submitted on behalf of the practices and physician organizations. Budget neutrality, or net savings, is determined on a yearly (or multiple-year) basis by subtracting all paid fees during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality are slightly lower than the actual fees paid because the savings regression model excludes beneficiaries eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees also are calculated excluding beneficiaries with fewer than 3 months of demonstration eligibility.

### **Statistical Tests of Budget Neutrality**

This regression methodology allows for statistical tests of confidence that CMS and the states can place in any estimated savings. Three tests are conducted in the analysis.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration intervention associated with a lower level of costs in one or more demonstration quarters during the first 2 years?*
2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower MAPCP Demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings must be positive, implying systematically lower MAPCP Demonstration expenditures relative to the PCMH comparison group and controlling for beneficiary and practice characteristics.
3. The third test requires that total gross savings exceeds total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid out?*

### **Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures**

In addition to statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration into

perspective. The first measure is the return on investment (RoI) of fees, the ratio of total gross savings to total fees paid by the MAPCP Demonstration. RoI answers the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implies budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among demonstration beneficiaries in the absence of the demonstration. This unobservable outcome is estimated by taking average Medicare expenditures observed in the comparison group and multiplying them by the number of demonstration beneficiaries. Viewing the total gross savings in context of this number answers the question: What was Medicare's savings as a percentage of all expenditures? The validity of the interpretation of both of these ratios, however, relies on the statistical significance of the estimate of total gross savings.

**Tables 9-10a–c** report the estimated gross and net savings for Michigan during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 9-10a**  
**Michigan: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	-\$220.71*	-\$153.04	-\$143.16	-\$124.25	-\$159.09*
Eligible beneficiary quarters (B)	176,915	192,686	190,672	192,277	752,550
Total gross savings (C = -A*B)	\$39,046,702	\$29,488,209	\$27,296,774	\$23,890,307	\$119,721,992
Total MAPCP Demonstration fees (D)	\$5,166,301	\$5,629,473	\$5,557,698	\$5,625,947	\$21,979,419
Net savings (E = C-D)	\$33,880,401	\$23,858,736	\$21,739,077	\$18,264,359	\$97,742,573
Average expenditures (PCMH CG) (F)	\$2,415	\$2,758	\$2,555	\$2,995	\$2,686
Total expenditures (PCMH CG) (G = F*B)	\$427,249,725	\$531,427,988	\$487,166,960	\$575,869,615	\$2,021,714,288
Average expenditures (MAPCP Demonstration) (H)	\$2,389	\$2,553	\$2,484	\$2,613	\$2,512
Total expenditures (MAPCP Demonstration) (I = H*B)	\$422,649,935	\$491,927,358	\$473,629,248	\$502,419,801	\$1,890,626,342

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 9-10b**  
**Michigan: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	2013: Q3 (Jul–Sept)	2013: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	-\$264.52*	-\$343.09*	-\$347.53*	-\$404.10*	-\$339.88*
Eligible beneficiary quarters (B)	190,069	192,449	192,996	190,478	765,992
Total gross savings (C = -A*B)	\$50,277,638	\$66,026,758	\$67,072,295	\$76,971,123	\$260,347,814
Total MAPCP Demonstration fees (D)	\$5,540,968	\$5,467,881	\$5,526,718	\$5,449,849	\$21,985,416
Net savings (E = C-D)	\$44,736,670	\$60,558,877	\$61,545,577	\$71,521,274	\$238,362,398
Average expenditures (PCMH CG) (F)	\$2,907	\$3,005	\$2,966	\$3,111	\$2,997
Total expenditures (PCMH CG) (G = F*B)	\$552,530,583	\$578,309,245	\$572,426,136	\$592,577,058	\$2,295,843,022
Average expenditures (MAPCP Demonstration) (H)	\$2,530	\$2,548	\$2,493	\$2,532	\$2,526
Total expenditures (MAPCP Demonstration) (I = H*B)	\$480,874,570	\$490,360,052	\$481,139,028	\$482,290,296	\$1,934,663,946

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 9-10c**  
**Michigan: Estimates of gross savings, fees paid, and net savings, all years**

	Year One and Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	-\$250.29*	-\$420.75	-\$79.82
Eligible beneficiary quarters (B)	1,518,542	—	—
Eligible beneficiaries overall	267,526	—	—
Total gross savings (C = -A*B)	\$380,069,806*	\$121,200,000	\$638,900,000
Total MAPCP Demonstration fees (D)	43,964,835	—	—
Net savings (E = C-D)	\$336,104,971*	\$77,235,165	\$594,935,165
Average expenditures (PCMH CG) (F)	\$2,843	—	—
Total expenditures (PCMH CG) (G = *B)	\$4,317,557,310	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,519	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$3,825,290,288	—	—
Return on fees (J = C/D)	8.64	—	—
Gross savings per comparison expenditures (K = C/G)	0.088	—	—

NOTES:

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A\*B): Weighted average of the quarterly difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (comp) (F\*B): Average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(J) Return on fees (J = C/D): Total gross savings divided by total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2012:Q1–2013:Q4.

- Estimated differences in MAPCP Demonstration costs per beneficiary, relative to the PCMH comparison group, range from a negative \$124.25 (2012: Quarter 4) to a negative \$404.01 (2013: Quarter 4) [*Tables 9-10a-b*]. Estimates in all eight quarters are negative and statistical significance was observed in the first quarter of Year One and in all four quarters of Year Two.
- Estimated total gross savings to Medicare was a positive \$380,069,806, indicating savings in the MiPCT program [*Table 9-10c: C*]. The confidence interval (2-sided; 90% level) ranges between \$121 million and \$639 million in savings, indicating that the observed total gross savings is statistically significant. Net savings are estimated at \$336,104,971 and similarly were statistically significant.
- The \$380 million savings estimate is 8.8 percent of the estimated \$4.3 billion in comparison group costs weighted by MiPCT-eligible beneficiaries [*Table 9-10c: K*].
- Total fees paid out based on MiPCT-eligible quarters were \$43,964,835 [*Table 9-10c: D*], or \$9.65 per eligible month.<sup>2</sup> This is similar to the agreed upon Medicare PBPM contribution of \$9.76. The fees averaged about 1.1 percent of total Medicare expenditures for health services by MiPCT-eligible beneficiaries during the demonstration's first two 2 years [*Table 9-10c: I*].
- This translates into a positive Medicare RoI of fees of 8.64 (\$380,069,806/\$43,964,835) [*Table 9-10c: J*].

#### 9.6.4 Discussion of Effectiveness

At the outset of the MAPCP Demonstration, MiPCT leaders believed that both acute-care and ER utilization and expenditures would decrease for demonstration beneficiaries assigned to MiPCT practices. Some Year Two activities, such as providing training for care managers on follow-up after hospital discharge and care transitions, could have near-term effects on these measures, though the other activities of care managers—such as patient education and self-management coaching for patients with diabetes—may yield reductions in utilization only in the long-term. Beneficiaries assigned to MiPCT practices had slower overall growth in total Medicare expenditures and acute-care expenditures in both Years One and Two and overall relative to the PCMH comparison group, but not to the non-PCMH comparison group. Partly consistent with this finding, all-cause hospital admissions for beneficiaries assigned to MiPCT practices were significantly lower relative to the PCMH comparison group, but not to the non-PCMH comparison group. Overall over the 2-year period, beneficiaries assigned to MiPCT practices also had lower post-acute-care spending compared to both PCMH and non-PCMH comparison groups. Reductions in hospital and post-acute-care expenditures accounted for most of the reduction in spending. The few other significant differences between MiPCT and one or more comparison groups, such as the slower rate of growth for primary care physician and

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<sup>2</sup> Fees per eligible month equaled the total fees divided by MAPCP Demonstration-eligible months. Eligible months equaled eligible quarters multiplied by 3.

laboratory expenditures, and the increase in the rate of growth for other facility expenditures, appeared only in some years. It remains to be seen if clear trends would emerge in Year Three.

With regard to ER utilization, there was a significant increase in ER visits not leading to hospitalizations only relative to the PCMH comparison group in Year Two.

Analysis of the first 2 years of the demonstration suggests the MAPCP Demonstration had lower Medicare costs, compared to medical home practices not participating in the demonstration. Further, although preliminary, this net savings finding suggests that the MiPCT practice model may be able to generate more than enough savings to offset its payments to practices and physician organizations for care management, infrastructure development, and incentive payments for meeting quality of care targets.

## **9.7 Special Populations**

### **9.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

MiPCT did not target any particular population for special interventions or services. No special interventions were designed for groups, such as Hispanics, African Americans, or those dually eligible for Medicare and Medicaid. Despite this lack of special programs for specific subpopulations, respondents believed the most disadvantaged patients had the most to gain from MiPCT's patient-centered focus. As a result, they said there was no need for targeted interventions for special populations. Many respondents argued, however, that MiPCT's focus on care management was particularly beneficial to certain subpopulations, such as people at high risk for readmission and people with multiple chronic conditions. Patients with diabetes appeared to be a special focus of many practices, with an emphasis on self-management and education.

### **9.7.2 Changes Experienced by Special Populations**

In all states, we provide quantitative analysis of the association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries. These special populations include beneficiaries with specific conditions that could lead to higher utilization of health care (beneficiaries with multiple chronic conditions, behavioral health conditions, or disabilities) or those who may experience disparities in access to and quality of health care (beneficiaries who are dually eligible for Medicare and Medicaid, live in rural areas, or belong to racial/ethnic minorities). **Table 9-11** reports covariate-adjusted differences in total Medicare spending PBPM across MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for all eight special populations. Estimates in **Table 9-11** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

**Tables 9-12 through 9-16** examine the changes associated with the MAPCP Demonstration for beneficiaries with multiple chronic conditions. Care management might be expected to have a greater impact on the outcomes for this population than for the Medicare population in general, and, for this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population in all states.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in two consecutive years of Medicare claims. To identify chronic conditions, we used the Chronic Condition Indicator algorithm, developed by the Agency for Healthcare Research and Quality (AHRQ) as part of the Healthcare Cost and Utilization Project (discussed in more detail in Appendix D). The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one lasting 12 months or longer and meeting one or both of the following conditions: (a) limiting a person's ability to care for themselves, live independently, or interact with others; (b) requiring ongoing intervention with medical products, services, and/or special equipment. In addition, beneficiaries also had to be in the CMS-HCC high-risk category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 24 percent of beneficiaries fit this profile in Michigan.

Medicare beneficiaries with behavioral health conditions are another population with greater health needs who could benefit more from care management, relative to the Medicare population in general. This population also has expenditures and utilization directly identifiable as due to behavioral health conditions. In all states, we report the changes associated with the MAPCP Demonstration on a selection of overall and behavioral health-specific expenditure and utilization outcomes, in **Table 9-17** and **Table 9-18**.

For the remaining special populations listed above, we provide additional analyses of the changes associated with the MAPCP Demonstration on selected expenditure and utilization outcomes only if the MAPCP Demonstration was associated with statistically significant changes in total Medicare expenditures, as reported in **Table 9-11**. For these special populations, we report the outcomes requested by CMS, which are acute-care expenditures, outpatient ER expenditures, acute hospital visits, outpatient ER visits, and readmissions, to gain a better understanding of the significant reductions in total Medicare expenditures. In Michigan, these outcomes for disabled beneficiaries are reported in **Table 9-19**; for beneficiaries who were dually eligible for Medicare and Medicaid, these outcomes are reported in **Table 9-20**, and for non-White beneficiaries, these outcomes are reported in **Table 9-21**.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 9.7.3**.

**Table 9-11**  
**Michigan: Comparison of average change estimates for total PBPM Medicare expenditures**  
**among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Multiple chronic conditions only				
Year One (N = 55,478)	-141.16*	[-263.30, -19.03]	-52.57	[-105.42, 0.28]
Year Two (N = 51,517)	-401.62*	[-627.59, -175.66]	-160.94*	[-250.98, -70.90]
Overall (N = 63,881)	-266.33*	[-425.11, -107.56]	-104.65*	[-167.68, -41.62]
Behavioral health conditions only				
Year One (N = 30,508)	-22.28	[-92.13, 47.57]	-53.79	[-122.49, 14.91]
Year Two (N = 29,899)	-140.32	[-302.25, 21.60]	-88.12*	[-149.85, -26.40]
Overall (N = 36,472)	-80.91	[-177.50, 15.69]	-70.84*	[-127.08, -14.60]
Disabled beneficiaries only				
Year One (N = 58,155)	-40.14	[-101.60, 21.33]	0.43	[-42.39, 43.25]
Year Two (N = 59,865)	-115.36*	[-211.88, -18.85]	-7.82	[-50.29, 34.65]
Overall (N = 70,679)	-78.58*	[-147.24, -9.92]	-3.79	[-41.62, 34.05]
Dually eligible beneficiaries only				
Year One (N = 34,888)	-55.53	[-149.86, 38.79]	6.80	[-41.30, 54.90]
Year Two (N = 35,977)	-136.45*	[-252.68, -20.22]	-78.72*	[-135.25, -22.19]
Overall (N = 42,345)	-96.88*	[-190.07, -3.70]	-36.90	[-84.62, 10.82]
Rural beneficiaries only				
Year One (N = 14,780)	-100.75	[-218.49, 17.00]	-42.65	[-91.72, 6.41]
Year Two (N = 15,474)	-120.35	[-245.16, 4.46]	24.44	[-48.18, 97.05]
Overall (N = 17,898)	-110.83	[-226.83, 5.16]	-8.14	[-64.52, 48.24]
Non-White beneficiaries only				
Year One (N = 30,383)	-111.36	[-236.73, 14.01]	40.88	[-23.54, 105.29]
Year Two (N = 31,595)	-269.50*	[-518.12, -20.87]	-49.82	[-120.69, 21.06]
Overall (N = 37,080)	-192.32*	[-370.01, -14.63]	-5.56	[-67.03, 55.92]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique MiPCT participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in total Medicare expenditures is \$266.33 slower among **beneficiaries with multiple chronic conditions** in MiPCT practices, relative to beneficiaries with multiple chronic conditions in PCMH practices.
- The *overall* growth in total Medicare expenditures is \$104.65 slower among **beneficiaries with multiple chronic conditions** in MiPCT practices, relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- The *overall* growth in total Medicare expenditures is \$70.84 slower among **beneficiaries with behavioral health conditions** in MiPCT practices, relative to beneficiaries with behavioral health conditions in non-PCMH practices.
- The *overall* growth in total Medicare expenditures is \$78.58 slower among **disabled beneficiaries** in MiPCT practices, relative to disabled beneficiaries in PCMH practices.
- The *overall* growth in total Medicare expenditures is \$96.88 slower among **dually eligible beneficiaries** in MiPCT practices, relative to dually eligible beneficiaries in PCMH practices.
- The Year Two estimate suggests a trend toward slower growth in total Medicare expenditures among **dually eligible beneficiaries** in MiPCT practices, relative to dually eligible beneficiaries in non-PCMH practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in total Medicare expenditures is \$192.32 slower among **non-White beneficiaries** in MiPCT practices, relative to beneficiaries in PCMH practices.

### **Beneficiaries with Multiple Chronic Conditions**

Care management and other MiPCT initiatives may have greater effects on populations with multiple chronic conditions than on the general population. The next five tables report the association between the MiPCT and the subpopulation of beneficiaries with multiple chronic conditions, examining quality of care, access to care, and expenditures among this population. In these analyses, the MiPCT group and the PCMH and non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions.

**Table 9-12** reports covariate-adjusted differences in several process of care indicators across MiPCT participants and the two comparison groups. Estimates in **Table 9-12** are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood of receiving care. MiPCT beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 9-13**. Estimates in **Table 9-13** are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If MiPCT is associated with improved access to ambulatory care, we would expect beneficiaries with multiple chronic conditions to have reduced rates (i.e., a significant negative value) of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 9.3.2**.

**Table 9-12**  
**Michigan: Comparison of average change estimates for process of care indicators among**  
**beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 13,822)	-1.88	[-5.29, 1.53]	0.86	[-0.74, 2.46]
Year Two (N = 7,514)	-4.17*	[-6.64, -1.71]	0.20	[-1.73, 2.12]
Overall (N = 14,190)	-2.68	[-5.56, 0.20]	0.63	[-0.76, 2.02]
Retinal eye examination				
Year One (N = 13,822)	-2.02	[-4.90, 0.86]	0.54	[-2.10, 3.17]
Year Two (N = 7,514)	-2.12	[-7.57, 3.33]	-0.15	[-4.14, 3.84]
Overall (N = 14,190)	-2.06	[-5.08, 0.97]	0.30	[-2.30, 2.89]
LDL-C screening				
Year One (N = 13,822)	-3.41*	[-6.04, -0.77]	-1.83	[-4.88, 1.22]
Year Two (N = 7,514)	-2.27	[-7.57, 3.03]	-0.16	[-4.25, 3.94]
Overall (N = 14,190)	-3.01*	[-5.94, -0.08]	-1.25	[-4.38, 1.88]
Medical attention for nephropathy				
Year One (N = 13,822)	-2.65	[-6.11, 0.81]	-1.36	[-3.79, 1.07]
Year Two (N = 7,514)	0.62	[-3.96, 5.20]	0.25	[-3.20, 3.69]
Overall (N = 14,190)	-1.51	[-5.09, 2.07]	-0.80	[-3.38, 1.77]
Received all 4 diabetes tests				
Year One (N = 13,822)	-1.83	[-5.52, 1.86]	-0.33	[-4.58, 3.91]
Year Two (N = 7,514)	2.66	[-3.93, 9.24]	0.56	[-4.59, 5.71]
Overall (N = 14,190)	-0.27	[-4.43, 3.90]	-0.02	[-4.12, 4.08]
Received none of the 4 diabetes tests				
Year One (N = 13,822)	0.82*	[0.06, 1.58]	0.13	[-0.46, 0.72]
Year Two (N = 7,514)	0.84	[-0.10, 1.79]	0.01	[-1.03, 1.04]
Overall (N = 14,190)	0.83*	[0.20, 1.46]	0.09	[-0.45, 0.63]

(continued)

**Table 9-12 (continued)**  
**Michigan: Comparison of average change estimates for process of care indicators among**  
**beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total lipid panel				
Year One (N = 30,532)	-3.82*	[-6.18, -1.45]	-0.75	[-2.98, 1.47]
Year Two (N = 17,202)	-1.33	[-6.11, 3.45]	0.50	[-3.13, 4.12]
Overall (N = 32,638)	-2.93*	[-5.84, -0.03]	-0.31	[-2.77, 2.15]

NOTE:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique MiPCT participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend away from receiving **HbA1c screening**, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the likelihood that MiPCT beneficiaries with multiple chronic conditions received **LDL-C screening** by 3.01 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with an increase in the likelihood that MiPCT beneficiaries with multiple chronic conditions received **none of the four diabetes tests** by 0.83 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the likelihood that MiPCT beneficiaries with multiple chronic conditions received a **total lipid panel test** by 2.93 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.

**Table 9-13**  
**Michigan: Comparison of average change estimates for health outcomes among**  
**beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 55,478)	-2.44	[-6.03, 1.14]	-1.19	[-3.04, 0.66]
Year Two (N = 51,517)	-4.85*	[-9.59, -0.11]	-2.85*	[-5.45, -0.25]
Overall (N = 63,881)	-3.60	[-7.49, 0.29]	-1.99*	[-3.94, -0.03]
PQI admissions—overall <sup>2</sup>				
Year One (N = 55,478)	-1.47	[-5.76, 2.81]	-1.16	[-4.42, 2.10]
Year Two (N = 51,517)	-1.11	[-4.77, 2.56]	-1.04	[-4.24, 2.16]
Overall (N = 63,881)	-1.30	[-4.75, 2.16]	-1.10	[-3.99, 1.79]
PQI admissions—acute <sup>3</sup>				
Year One (N = 55,478)	0.38	[-1.20, 1.97]	-2.18*	[-4.13, -0.23]
Year Two (N = 51,517)	1.03	[-0.46, 2.52]	-1.74	[-3.77, 0.29]
Overall (N = 63,881)	0.70	[-0.56, 1.96]	-1.97*	[-3.71, -0.22]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 55,478)	-1.69	[-5.14, 1.75]	0.94	[-1.36, 3.25]
Year Two (N = 51,517)	-2.00	[-5.73, 1.72]	0.57	[-1.68, 2.81]
Overall (N = 63,881)	-1.84	[-4.99, 1.31]	0.76	[-1.17, 2.70]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices, the Year Two estimate suggests a trend toward a decrease in the rate of **avoidable catastrophic events** among MiPCT beneficiaries with multiple chronic conditions, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the rate of **avoidable catastrophic events** among MiPCT beneficiaries with multiple chronic conditions.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the rate of **acute PQI admissions** among MiPCT beneficiaries with multiple chronic conditions. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.

**Table 9-14** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the MiPCT and two comparison groups—PCMHs and non-PCMHs—for the population with multiple chronic conditions. With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 9.4.2**.

**Table 9-14**  
**Michigan: Comparison of average change estimates for access to care and coordination of**  
**care among beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 55,478)	68.96	[-26.30, 164.22]	52.68*	[7.08, 98.28]
Year Two (N = 51,517)	-124.33	[-278.34, 29.68]	-12.46	[-62.85, 37.94]
Overall (N = 63,881)	-23.93	[-130.45, 82.59]	21.38	[-21.89, 64.65]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 55,478)	7.73	[-49.08, 64.55]	31.26	[-9.40, 71.91]
Year Two (N = 51,517)	-113.15*	[-182.81, -43.49]	-33.51	[-91.81, 24.79]
Overall (N = 63,881)	-50.36	[-108.88, 8.16]	0.13	[-43.30, 43.56]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 55,478)	-6.27	[-22.84, 10.31]	5.45	[-8.48, 19.38]
Year Two (N = 51,517)	-13.07	[-36.41, 10.27]	7.27	[-9.88, 24.43]
Overall (N = 63,881)	-9.54	[-28.20, 9.13]	6.32	[-7.34, 19.99]
Primary care visits as percentage of total visits (higher quintile = larger percentage)				
Year One (N = 54,420)				
1st quintile	-1.26	[-3.85, 1.34]	0.84	[-0.93, 2.61]
5th quintile	0.57	[-0.57, 1.71]	-0.40	[-1.27, 0.46]
Year Two (N = 35,076)				
1st quintile	-1.91	[-4.11, 0.29]	-0.82	[-3.53, 1.89]
5th quintile	0.82	[-0.09, 1.74]	0.37	[-0.82, 1.55]
Overall (N = 56,046)				
1st quintile	-1.51	[-3.55, 0.53]	0.20	[-1.75, 2.14]
5th quintile	0.67	[-0.22, 1.55]	-0.11	[-1.01, 0.79]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 15,106)	6.15	[-35.46, 47.77]	35.05*	[7.72, 62.38]
Year Two (N = 12,967)	-4.54	[-41.21, 32.13]	34.84	[-1.63, 71.31]
Overall (N = 23,317)	1.26	[-32.84, 35.35]	34.95*	[7.25, 62.66]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 18,254)	-77.46*	[-120.08, -34.84]	-4.21	[-24.72, 16.31]
Year Two (N = 15,814)	-17.79	[-49.79, 14.22]	23.68	[-1.14, 48.49]
Overall (N = 27,729)	-49.95*	[-83.87, -16.03]	8.65	[-10.94, 28.24]

(continued)

**Table 9-14 (continued)**  
**Michigan: Comparison of average change estimates for access to care and coordination of**  
**care among beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care (higher quintile = better continuity of care)				
Year One (N = 60,702)				
1st quintile	0.08	[-2.15, 2.30]	-0.69	[-2.15, 0.77]
5th quintile	-0.06	[-1.90, 1.77]	0.54	[-0.59, 1.67]
Year Two (N = 39,833)				
1st quintile	-2.06	[-4.17, 0.06]	-1.26	[-3.27, 0.76]
5th quintile	1.61*	[0.04, 3.18]	1.00	[-0.55, 2.55]
Overall (N = 61,653)				
1st quintile	-0.75	[-2.78, 1.28]	-0.91	[-2.26, 0.45]
5th quintile	0.59	[-1.03, 2.20]	0.72	[-0.33, 1.77]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique MiPCT participants with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend towards decreasing the rate of **medical specialist visits** among MiPCT beneficiaries with multiple chronic conditions, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with an increase in the rate of **follow-up visits within 14 days after discharge** among MiPCT beneficiaries with multiple chronic conditions by 34.95 per 1,000 beneficiary quarters with a live discharge. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the rate of **30-day unplanned readmissions** among MiPCT beneficiaries with multiple chronic conditions by 49.95 per 1,000 beneficiaries with a live discharge. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a trend toward an increase in continuity of care, as measured by concentration of visits, though the overall estimates are not statistically significant. Specifically, in Year Two the demonstration is associated with an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers.

**Tables 9-15 and 9-16** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to MiPCT practices and two comparison groups: beneficiaries with multiple chronic conditions attributed to PCMH comparison practices and beneficiaries with multiple chronic conditions attributed to non-PCMH practices. Estimates in **Table 9-15** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

The MiPCT also is expected to result in lower utilization of services such as all-cause admissions and ER care. **Table 9-16** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 9.6.2**.

**Table 9-15**  
**Michigan: Comparison of average change estimates for expenditures among Medicare**  
**beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 55,478)	-141.16*	[-263.30, -19.03]	-52.57	[-105.42, 0.28]
Year Two (N = 51,517)	-401.62*	[-627.59, -175.66]	-160.94*	[-250.98, -70.90]
Overall (N = 63,881)	-266.33*	[-425.11, -107.56]	-104.65*	[-167.68, -41.62]
Acute-care				
Year One (N = 55,478)	-87.02*	[-161.74, -12.29]	-21.30	[-54.66, 12.06]
Year Two (N = 51,517)	-171.17*	[-270.07, -72.27]	-62.00*	[-112.89, -11.11]
Overall (N = 63,881)	-127.46*	[-208.96, -45.95]	-40.86*	[-78.57, -3.15]
Post-acute-care				
Year One (N = 55,478)	-28.77	[-63.75, 6.20]	-30.03*	[-55.95, -4.12]
Year Two (N = 51,517)	-97.73*	[-187.16, -8.30]	-62.71*	[-89.92, -35.49]
Overall (N = 63,881)	-61.91*	[-115.81, -8.01]	-45.73*	[-69.04, -22.43]
ER				
Year One (N = 55,478)	-3.50	[-8.34, 1.35]	1.88	[-0.77, 4.53]
Year Two (N = 51,517)	-4.61	[-10.24, 1.02]	-3.67*	[-7.12, -0.22]
Overall (N = 63,881)	-4.03	[-8.48, 0.42]	-0.79	[-3.25, 1.68]
Outpatient				
Year One (N = 55,478)	-1.23	[-24.45, 21.99]	13.33	[-4.47, 31.14]
Year Two (N = 51,517)	-32.93*	[-57.71, -8.15]	11.24	[-1.74, 24.21]
Overall (N = 63,881)	-16.46	[-39.40, 6.48]	12.33	[-1.50, 26.15]
Specialty physician				
Year One (N = 55,478)	-22.84*	[-41.44, -4.24]	-15.64*	[-27.53, -3.74]
Year Two (N = 51,517)	-47.53*	[-66.62, -28.44]	-27.65*	[-43.07, -12.23]
Overall (N = 63,881)	-34.71*	[-52.09, -17.33]	-21.41*	[-33.22, -9.61]
Primary care physician				
Year One (N = 55,478)	-1.29	[-9.21, 6.63]	-3.82	[-8.27, 0.64]
Year Two (N = 51,517)	-24.88	[-51.20, 1.44]	-9.23*	[-14.17, -4.29]
Overall (N = 63,881)	-12.63	[-27.78, 2.52]	-6.42*	[-10.72, -2.11]
Home health				
Year One (N = 55,478)	4.98	[-5.50, 15.46]	3.81	[-3.16, 10.77]
Year Two (N = 51,517)	-13.23*	[-25.18, -1.28]	-4.53	[-11.91, 2.85]
Overall (N = 63,881)	-3.77	[-13.93, 6.38]	-0.20	[-6.71, 6.31]
Other non-facility				
Year One (N = 55,478)	-1.81	[-6.38, 2.76]	-1.77	[-4.83, 1.29]
Year Two (N = 51,517)	-5.43	[-11.87, 1.02]	-0.95	[-5.16, 3.26]
Overall (N = 63,881)	-3.55	[-8.34, 1.25]	-1.37	[-4.57, 1.83]

(continued)

**Table 9-15 (continued)**  
**Michigan: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Laboratory				
Year One (N = 55,478)	-1.17	[-2.88, 0.54]	-2.24*	[-3.70, -0.78]
Year Two (N = 51,517)	-2.52*	[-4.70, -0.33]	-4.00*	[-6.88, -1.11]
Overall (N = 63,881)	-1.82*	[-3.61, -0.03]	-3.08*	[-5.08, -1.08]
Imaging				
Year One (N = 55,478)	-0.38	[-2.24, 1.48]	-0.75	[-2.47, 0.98]
Year Two (N = 51,517)	-3.34*	[-5.86, -0.82]	-1.63	[-3.81, 0.55]
Overall (N = 63,881)	-1.80	[-3.78, 0.17]	-1.17	[-3.01, 0.66]
Other facility				
Year One (N = 55,478)	0.29	[-0.25, 0.83]	0.23	[-0.05, 0.51]
Year Two (N = 51,517)	0.22	[-0.77, 1.21]	0.29	[-0.05, 0.63]
Overall (N = 63,881)	0.26	[-0.49, 1.00]	0.26	[-0.05, 0.56]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique MiPCT participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$266.33 slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in PCMH practices.
- The *overall* growth in **total Medicare expenditures** is \$104.65 slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- The *overall* growth in **acute-care expenditures** is \$127.46 slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in PCMH practices.

- The *overall* growth in **acute-care expenditures** is \$40.86 slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- The *overall* growth in post-**acute-care expenditures** is \$61.91 slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in PCMH practices.
- The *overall* growth in post-**acute-care expenditures** is \$45.73 slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, the negative Year Two estimate suggests a potential trend towards slower growth in **expenditures for ER visits not leading to hospitalization** among beneficiaries with multiple chronic conditions in MiPCT practices, though at this time the *overall* estimate is not statistically significant.
- Relative to beneficiaries with multiple chronic conditions in PCMH practices, the negative Year Two estimate suggests a potential trend towards slower growth in **outpatient (including FQHC) expenditures** among beneficiaries with multiple chronic conditions in MiPCT practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **specialty physician expenditures** is slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in either PCMH or non-PCMH practices.
- The *overall* growth in **primary care physician expenditures** is slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in non-PCMH practices.
- Relative to beneficiaries with multiple chronic conditions in PCMH practices, the negative Year Two estimate suggests a potential trend towards slower growth in **home health expenditures** among demonstration beneficiaries with multiple chronic conditions in MiPCT practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **laboratory expenditures** is slower among beneficiaries with multiple chronic conditions in MiPCT practices, relative to beneficiaries with multiple chronic conditions in either PCMH or non-PCMH practices.
- Relative to beneficiaries with multiple chronic conditions in PCMH practices, the negative Year Two estimate suggests a potential trend towards slower growth in **imaging expenditures** among beneficiaries with multiple chronic conditions in MiPCT practices, though at this time the *overall* estimate is not statistically significant.

**Table 9-16**  
**Michigan: Comparison of average change estimates for utilization among beneficiaries**  
**with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 55,478)	-15.77*	[-30.03, -1.51]	-1.92	[-10.73, 6.89]
Year Two (N = 51,517)	-26.39*	[-40.29, -12.49]	-4.62	[-14.48, 5.25]
Overall (N = 63,881)	-20.87*	[-34.24, -7.50]	-3.21	[-11.87, 5.44]
ER visits not leading to hospitalization				
Year One (N = 55,478)	-15.82	[-37.65, 6.01]	1.12	[-16.30, 18.53]
Year Two (N = 51,517)	-13.05	[-33.72, 7.63]	-6.95	[-23.88, 9.98]
Overall (N = 63,881)	-14.49	[-34.14, 5.16]	-2.76	[-18.54, 13.01]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the rate of **all-cause admissions** by 20.87 per 1,000 beneficiary quarters among MiPCT beneficiaries with multiple chronic conditions.

### Beneficiaries with Behavioral Health Conditions

**Tables 9-17 and 9-18** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between Medicare beneficiaries with behavioral health conditions assigned to MiPCT practices, compared to beneficiaries in PCMHs and non-PCMHs. Research has shown that individuals with psychosocial and substance abuse disorders have substantial unmet needs for health care. Within the medical home, significant care management and coordination resources may be required to meet the needs of these patients. There were no targeted interventions implemented under the MiPCT project to improve utilization of health services and quality of care specifically for individuals with mental illness and substance abuse disorders. These individuals were expected, however, to benefit from the initiatives to improve

access to, coordination of, and continuity of care between primary care and behavioral health providers. For example, MiPCT is expected to increase care coordination between primary care and behavioral health providers for beneficiaries with mental illnesses and substance use disorders. Improved access and care coordination may increase use of outpatient behavioral health services and primary care visits, and, in turn, more appropriate use of outpatient care may lead to decreases in rates of hospitalizations and ER visits (both overall and for behavioral health conditions specifically).

For this analysis, beneficiaries with behavioral health conditions are defined as those with at least one inpatient claim or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder during the 12-month period before participation in the demonstration. Using this criterion, on average, about 14 percent of the study sample (MiPCT and comparison group beneficiaries) was identified as having a behavioral health condition.<sup>3</sup> The expenditure outcomes of interest include total Medicare expenditures, expenditures for acute hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments.

The utilization outcomes of interest include all-cause inpatient admissions, all-cause ER visits, outpatient visits with a principal diagnosis of a behavioral health disorder, inpatient admissions with principal diagnosis of a behavioral health disorder, and ER visits with a principal diagnosis of a behavioral health disorder. All utilization measures represent a quarterly rate of visits per 1,000 beneficiaries.

Significant *negative* estimates correspond to a *decrease* in expenditures or the rate of events over time relative to the comparison group, and *positive* estimates correspond to an *increase* in expenditures or the rate of events over time relative to the comparison group.

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<sup>3</sup> A behavioral health condition was present in 13.6 percent of beneficiaries in the MiPCT group, 17.2 percent of beneficiaries in the PCMH comparison group, and 14.9 percent of beneficiaries in the non-PCMH comparison group.

**Table 9-17**  
**Michigan: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 30,508)	-22.28	[-92.13, 47.57]	-53.79	[-122.49, 14.91]
Year Two (N = 29,899)	-140.32	[-302.25, 21.60]	-88.12*	[-149.85, -26.40]
Overall (N = 36,472)	-80.91	[-177.50, 15.69]	-70.84*	[-127.08, -14.60]
Acute-care				
Year One (N = 30,508)	-29.83	[-60.74, 1.09]	-38.22*	[-73.39, -3.04]
Year Two (N = 29,899)	-52.23	[-113.25, 8.79]	-40.17*	[-72.49, -7.84]
Overall (N = 36,472)	-40.95*	[-77.50, -4.41]	-39.18*	[-68.01, -10.36]
ER visits not leading to hospitalization				
Year One (N = 30,508)	-0.47	[-4.59, 3.65]	0.69	[-2.79, 4.17]
Year Two (N = 29,899)	-3.92	[-9.41, 1.57]	-5.03*	[-8.19, -1.86]
Overall (N = 36,472)	-2.19	[-5.42, 1.05]	-2.15	[-4.61, 0.31]
Total for services with a principal diagnosis of a behavioral health condition				
Year One (N = 30,508)	3.95	[-0.95, 8.85]	3.44	[-0.85, 7.73]
Year Two (N = 29,899)	0.27	[-4.51, 5.04]	-4.06	[-9.98, 1.86]
Overall (N = 36,472)	2.12	[-1.96, 6.20]	-0.29	[-4.84, 4.26]
Total for services with a secondary diagnosis of a behavioral health condition				
Year One (N = 30,508)	-26.26	[-61.51, 8.98]	-18.18	[-43.74, 7.38]
Year Two (N = 29,899)	-40.14	[-92.80, 12.53]	-28.08	[-56.68, 0.52]
Overall (N = 36,472)	-33.15	[-71.34, 5.03]	-23.10*	[-45.98, -0.21]

**NOTES:**

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique MiPCT participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$70.84 slower among beneficiaries with behavioral health conditions in MiPCT practices, relative to beneficiaries with behavioral health conditions in non-PCMH practices.
- The *overall* growth in **acute-care expenditures** is \$40.95 slower among beneficiaries with behavioral health conditions in MiPCT practices, relative to beneficiaries with behavioral health conditions in PCMH practices, and \$39.18 slower relative to beneficiaries with behavioral health conditions in non-PCMH practices.
- The Year Two estimate suggests a potential trend toward a slower growth rate in **expenditures for ER visits not leading to hospitalization** among beneficiaries with behavioral health conditions in MiPCT practices, relative to beneficiaries with behavioral health conditions in non-PCMH practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **Medicare expenditures for services with a secondary diagnosis of a behavioral health condition** is \$23.10 slower among beneficiaries with a behavioral health condition in MiPCT practices, relative to beneficiaries with a behavioral health condition in non-PCMH practices.

**Table 9-18**  
**Michigan: Comparison of average change estimates for behavioral and nonbehavioral**  
**health care utilization among beneficiaries with behavioral health conditions:**  
**First 2 Years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause inpatient admissions				
Year One (N = 30,508)	-7.16	[-16.82, 2.50]	-0.54	[-8.30, 7.22]
Year Two (N = 29,899)	-10.72*	[-19.87, -1.58]	-8.07*	[-16.04, -0.10]
Overall (N = 36,472)	-8.93*	[-17.37, -0.49]	-4.28	[-11.20, 2.64]
ER visits not leading to hospitalization				
Year One (N = 30,508)	8.52	[-5.54, 22.58]	10.88	[-4.74, 26.49]
Year Two (N = 29,899)	10.10	[-4.07, 24.27]	0.96	[-11.62, 13.54]
Overall (N = 36,472)	9.31	[-2.20, 20.82]	5.95	[-6.38, 18.28]
Behavioral health inpatient admissions				
Year One (N = 30,508)	0.14	[-0.90, 1.17]	0.17	[-0.69, 1.03]
Year Two (N = 29,899)	-0.48	[-1.68, 0.72]	-0.67	[-1.94, 0.60]
Overall (N = 36,472)	-0.17	[-1.18, 0.84]	-0.25	[-1.20, 0.70]

(continued)

**Table 9-18 (continued)**  
**Michigan: Comparison of average change estimates for behavioral and nonbehavioral**  
**health care utilization among beneficiaries with behavioral health conditions:**  
**First 2 Years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs		MiPCT practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Behavioral health ER visits				
Year One (N = 30,508)	1.96	[-1.07, 4.99]	1.41	[-2.01, 4.83]
Year Two (N = 29,899)	0.70	[-2.45, 3.85]	-1.08	[-4.45, 2.30]
Overall (N = 36,472)	1.33	[-1.32, 3.98]	0.17	[-2.97, 3.32]
Behavioral health outpatient visits <sup>1</sup>				
Year One (N = 28,817)	5.56	[-24.11, 35.23]	20.93	[-4.34, 46.21]
Year Two (N = 28,218)	-65.64*	[-99.72, -31.56]	-27.51	[-62.56, 7.54]
Overall (N = 34,934)	-29.73	[-59.87, 0.40]	-3.08	[-31.78, 25.62]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes, because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with behavioral health conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the rate of **all-cause inpatient admissions** among beneficiaries with behavioral health conditions assigned to MiPCT practices.
- When using beneficiaries with behavioral health conditions assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a potential trend toward a decrease in the rate of **all-cause inpatient admissions** among beneficiaries with behavioral health conditions assigned to MiPCT practices, though at this time the *overall* estimate is not statistically significant.

- When using beneficiaries with behavioral health conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a potential trend toward a decrease in the rate of **behavioral health outpatient visits** among beneficiaries with behavioral health conditions assigned to MiPCT practices, though at this time the *overall* estimate is not statistically significant.

As reported in **Table 9-11**, the overall growth in total Medicare expenditures was \$78.58 less for disabled Medicare beneficiaries attributed to MiPCT practices relative to disabled Medicare beneficiaries attributed to PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this special population, to provide additional information about what may have driven the reductions in Medicare expenditures.

### **Beneficiaries Whose Initial Medicare Eligibility Was Due to Disability**

About 26 percent of MiPCT Medicare beneficiaries originally were eligible for Medicare due to disability. Since disabled beneficiaries attributed to MiPCT practices experienced significant slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 9-19**.

**Table 9-19**  
**Michigan: Comparison of average change estimates for selected expenditure and utilization measures among disabled Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs	
	Average estimate	90% confidence interval
Total Medicare expenditures		
Year One (N = 58,155)	-40.14	[-101.60, 21.33]
Year Two (N = 59,865)	-115.36*	[-211.88, -18.85]
Overall (N = 70,679)	-78.58*	[-147.24, -9.92]
Acute-care expenditures		
Year One (N = 58,155)	-16.48	[-46.23, 13.27]
Year Two (N = 59,865)	-37.40	[-75.82, 1.02]
Overall (N = 70,679)	-27.17	[-57.51, 3.17]
ER visits not leading to hospitalization expenditures		
Year One (N = 58,155)	-2.69	[-5.45, 0.06]
Year Two (N = 59,865)	-3.64	[-7.64, 0.37]
Overall (N = 70,679)	-3.17*	[-6.14, -0.21]

(continued)

**Table 9-19 (continued)**  
**Michigan: Comparison of average change estimates for selected expenditure and utilization**  
**measures among disabled Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs	
	Average estimate	90% confidence interval
Specialty physician		
Year One (N = 58,155)	-3.61	[-9.90, 2.69]
Year Two (N = 59,865)	-16.58*	[-24.49, -8.67]
Overall (N = 70,679)	-10.23*	[-16.28, -4.19]
Primary care physician		
Year One (N = 58,155)	-7.58	[-20.36, 5.19]
Year Two (N = 59,865)	-17.94*	[-32.99, -2.90]
Overall (N = 70,679)	-12.88	[-26.13, 0.38]
All-cause admissions		
Year One (N = 58,155)	-10.94*	[-18.48, -3.39]
Year Two (N = 59,865)	-10.51*	[-17.06, -3.96]
Overall (N = 70,679)	-10.72*	[-17.33, -4.11]
ER visits not leading to a hospitalization		
Year One (N = 58,155)	0.44	[-13.22, 14.11]
Year Two (N = 59,865)	5.94	[-6.98, 18.86]
Overall (N = 70,679)	3.25	[-8.97, 15.47]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 10,589)	-37.92	[-85.12, 9.27]
Year Two (N = 10,665)	3.62	[-29.24, 36.48]
Overall (N = 17,849)	-17.19	[-53.01, 18.64]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants who were eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$78.58 slower among disabled beneficiaries in MiPCT practices, relative to disabled beneficiaries in PCMH practices.

- The *overall* growth in **ER expenditures** is \$3.17 slower among disabled beneficiaries assigned to MiPCT practices, relative to disabled beneficiaries assigned to PCMH practices. The lack of statistical significance in Year Two, however, makes it uncertain whether this association would persist into Year Three.
- The *overall* growth in **specialty physician expenditures** is \$10.23 slower among disabled beneficiaries assigned to MiPCT practices, relative to disabled beneficiaries assigned to PCMH practices.
- Relative to disabled beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend toward slower growth in **primary care physician expenditures**, though the *overall* estimate is not statistically significant.
- The *overall* growth in **all-cause admission expenditures** is \$10.72 slower among disabled beneficiaries assigned to MiPCT practices, relative to disabled beneficiaries assigned to PCMH practices.
- When using disabled beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a potential trend toward a decrease in the rate of **30-day unplanned readmissions** among disabled beneficiaries in MiPCT practices, though at this time the *overall* estimate is not statistically significant.

As reported in **Table 9-11**, the overall growth in total Medicare expenditures was \$96.88 slower for dually eligible beneficiaries attributed to MiPCT practices relative to dually eligible beneficiaries attributed to PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this special population, to provide additional information about what may have driven the reductions in Medicare expenditures.

### **Beneficiaries Who Are Dually Eligible for Medicare and Medicaid**

About 16 percent of MiPCT beneficiaries were dually eligible for Medicare and Medicaid. Since dually eligible beneficiaries attributed to MiPCT practices experienced significantly slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 9-20**.

**Table 9-20**  
**Michigan: Comparison of average change estimates for selected expenditure and utilization**  
**measures among dually eligible Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs	
	Average estimate	90% confidence interval
Dually eligible beneficiaries only		
Year One (N = 34,888)	-55.53	[-149.86, 38.79]
Year Two (N = 35,977)	-136.45*	[-252.68, -20.22]
Overall (N = 42,345)	-96.88*	[-190.07, -3.70]
Acute-care expenditures		
Year One (N = 34,888)	-23.28	[-62.02, 15.46]
Year Two (N = 35,977)	-57.67*	[-111.41, -3.93]
Overall (N = 42,345)	-40.85	[-82.29, 0.58]
ER visits not leading to hospitalization expenditures		
Year One (N = 34,888)	-2.49	[-6.89, 1.91]
Year Two (N = 35,977)	-3.11*	[-6.18, -0.04]
Overall (N = 42,345)	-2.81	[-6.01, 0.40]
Specialty physician		
Year One (N = 34,888)	-10.92*	[-20.41, -1.43]
Year Two (N = 35,977)	-22.18*	[-31.76, -12.60]
Overall (N = 42,345)	-16.67*	[-24.80, -8.55]
Primary care physician		
Year One (N = 34,888)	1.20	[-3.67, 6.08]
Year Two (N = 35,977)	-10.52*	[-19.56, -1.49]
Overall (N = 42,345)	-4.79	[-10.44, 0.87]
All-cause admissions		
Year One (N = 34,888)	-9.61*	[-17.61, -1.62]
Year Two (N = 35,977)	-9.87*	[-17.27, -2.47]
Overall (N = 42,345)	-9.74*	[-16.88, -2.61]
ER visits not leading to a hospitalization		
Year One (N = 34,888)	2.74	[-10.48, 15.95]
Year Two (N = 35,977)	8.28	[-3.62, 20.18]
Overall (N = 42,345)	5.57	[-5.43, 16.57]

(continued)

**Table 9-20 (continued)**  
**Michigan: Comparison of average change estimates for selected expenditure and utilization measures among dually eligible Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs	
	Average estimate	90% confidence interval
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 6,359)	-27.60	[-66.27, 11.08]
Year Two (N = 6,345)	-8.64	[-42.97, 25.69]
Overall (N = 10,659)	-18.19	[-48.17, 11.79]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants who were eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in total Medicare expenditures is \$96.88 slower among **dually eligible beneficiaries** in MiPCT practices, relative to dually eligible beneficiaries in PCMH practices.
- The Year Two estimate suggests a potential trend toward slower growth in **acute-care expenditures** among dually eligible beneficiaries in MiPCT practices, relative to dually eligible beneficiaries in PCMH practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **specialty physician expenditures** is \$16.67 slower among dually eligible beneficiaries assigned to MiPCT practices, relative to dually eligible beneficiaries assigned to PCMH practices.

- Relative to dually eligible beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend toward slower growth in **primary care physician expenditures**, though the *overall* estimate is not statistically significant,
- The Year Two estimate suggests a potential trend toward slower growth in **ER expenditures** among dually eligible beneficiaries in MiPCT practices, relative to dually eligible beneficiaries in PCMH practices, though at this time the *overall* estimate is not statistically significant.
- When using dually eligible beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the rate of **all-cause admissions** among dually eligible beneficiaries in MiPCT practices.
- When using dually eligible beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a potential trend toward a decrease in the rate of **all-cause admissions** among dually eligible beneficiaries assigned to MiPCT practices, though at this time the *overall* estimate is not statistically significant.
- When using dually eligible beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with an increase in the rate of **ER visits not leading to a hospitalization** among dually eligible beneficiaries in MiPCT practices.

As reported in **Table 9-11**, the overall growth in total Medicare expenditures was \$192.32 slower for non-White Medicare beneficiaries attributed to MiPCT practices relative to non-White Medicare beneficiaries attributed to PCMH comparison practices. In the following subsection, we report more detailed expenditure and utilization outcomes for this special population, to provide additional information about what may have driven the reductions in Medicare expenditures.

### **Beneficiaries Who Are Racial/Ethnic Minorities (Non-White)**

Among Medicare beneficiaries attributed to MiPCT practices across the first 2 years of the MAPCP Demonstration, 14 percent were non-White. Since non-White beneficiaries attributed to MiPCT practices experienced significantly slower rates of total Medicare expenditure growth, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in **Table 9-21**.

**Table 9-21**  
**Michigan: Comparison of average change estimates for selected expenditure and utilization**  
**measures among non-White Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs	
	Average estimate	90% confidence interval
Total Medicare expenditures		
Year One (N = 30,383)	-111.36	[-236.73, 14.01]
Year Two (N = 31,595)	-269.50*	[-518.12, -20.87]
Overall (N = 37,080)	-192.32*	[-370.01, -14.63]
Acute-care expenditures		
Year One (N = 30,383)	-46.82	[-114.53, 20.90]
Year Two (N = 31,595)	-99.91*	[-195.39, -4.43]
Overall (N = 37,080)	-74.00	[-153.32, 5.32]
ER visits not leading to hospitalization expenditures		
Year One (N = 30,383)	-2.75	[-6.80, 1.30]
Year Two (N = 31,595)	-5.18*	[-8.18, -2.18]
Overall (N = 37,080)	-3.99*	[-7.16, -0.82]
Specialty physician		
Year One (N = 30,383)	-14.80*	[-26.40, -3.20]
Year Two (N = 31,595)	-32.59*	[-47.67, -17.51]
Overall (N = 37,080)	-23.91*	[-36.00, -11.82]
Primary care physician		
Year One (N = 30,383)	-4.82	[-10.50, 0.86]
Year Two (N = 31,595)	-24.85	[-53.92, 4.22]
Overall (N = 37,080)	-15.08	[-32.26, 2.11]
All-cause admissions		
Year One (N = 30,383)	-12.09	[-28.10, 3.92]
Year Two (N = 31,595)	-18.60*	[-34.64, -2.57]
Overall (N = 37,080)	-15.43	[-31.22, 0.37]
ER visits not leading to a hospitalization		
Year One (N = 30,383)	1.03	[-12.85, 14.90]
Year Two (N = 31,595)	5.14	[-8.49, 18.77]
Overall (N = 37,080)	3.13	[-9.55, 15.81]

(continued)

**Table 9-21 (continued)**  
**Michigan: Comparison of average change estimates for selected expenditure and utilization measures among non-White Medicare beneficiaries:**  
**First 2 years of MAPCP Demonstration**

Outcome	MiPCT practices vs. CG PCMHs	
	Average estimate	90% confidence interval
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 5,534)	-60.47*	[-111.46, -9.47]
Year Two (N = 5,371)	-61.45*	[-108.45, -14.45]
Overall (N = 9,166)	-60.94*	[-98.49, -23.40]

NOTES:

- Acute-care expenditures and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MiPCT participants who were eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; MiPCT = Michigan Primary Care Transformation; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$192.32 slower among non-White beneficiaries in MiPCT practices, relative to beneficiaries in PCMH practices.
- The Year Two estimate suggests a potential trend toward a slower growth in **acute-care expenditures** among non-White beneficiaries in MiPCT practices, relative to non-White beneficiaries in PCMH practices, though at this time the *overall* estimate is not statistically significant.
- The *overall* growth in **ER expenditures** is \$3.99 slower among non-White beneficiaries in MiPCT practices, relative to non-White beneficiaries in PCMH practices.
- The *overall* growth in **specialty physician expenditures** is \$23.91 slower among non-White beneficiaries assigned to MiPCT practices, relative to non-White beneficiaries assigned to PCMH practices.

- The Year Two estimate suggests a potential trend toward slower growth in **ER expenditures** among non-White beneficiaries in MiPCT practices, relative to non-White beneficiaries in non-PCMH practices, though at this time the *overall* estimate is not statistically significant.
- When using non-White beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the MAPCP Demonstration is associated with a decrease in the rate of **30-day unplanned readmissions** among non-White beneficiaries assigned to MiPCT practices.

### 9.7.3 Discussion of Special Populations

While Michigan did not target specific special populations explicitly, the patient-centered character of the intervention was designed to meet the needs of most individual patients. Moreover, the care managers embedded in MiPCT practices—a central feature of the project—focused their attention on coordinating care for people at high risk of acute-care utilization and on those with multiple chronic conditions, which included many special population groups. Quantitative analyses of special populations for the first 2 years revealed some statistically significant findings, especially relative to the PCMH comparison group. For most outcomes, however, Medicare beneficiaries in MiPCT practices were not significantly different from Medicare beneficiaries assigned to the comparison groups. Notably, however, the analyses found statistically significant savings for expenditures in MiPCT practices, both compared to the PCMH and the non-PCMH comparison groups for some special populations. All findings, however, should be interpreted with caution since they represent a period when the MAPCP Demonstration had just begun and when care managers were being hired and trained and not yet seeing many patients.

The association between MiPCT and expenditures varied by special population (**Table 9-11**). Beneficiaries with multiple chronic conditions in the MiPCT practices had a statistically significant lower rate of growth relative to beneficiaries in the comparison PCMH and non-PCMH practices. Medicare beneficiaries who were initially eligible because of a disability, and non-Whites had reduced rates of growth over the 2-year period compared to beneficiaries in PCMH practices. In addition, compared to the non-PCMH comparison group, people with behavioral health conditions in MiPCT had reduced rates of growth over the 2-year period. Except for disabled beneficiaries, the magnitude of the decreased growth rate was greater for these special population than for the overall Medicare population (\$96.88 - \$266.33 versus \$83.43). For most outcomes, statistically significant reductions were not found among rural beneficiaries or relative to patients in non-PCMH comparison practices. More detailed analyses found that about two-thirds of the reductions came from reductions in hospital and post-hospital expenditures.

Much of the focus of the MAPCP Demonstration was on people with multiple chronic conditions, who were at risk of hospitalization and use of other expensive services. In general, more significant results were found for this population than for the population as a whole, especially comparing MiPCT practices to PCMH practices, although this was not consistent across measures.

Quality measures showed few significant differences for beneficiaries with multiple chronic conditions relative to the comparison groups. Over the first 2 years, despite care managers' emphasis on diabetes education, the diabetes-related measures among MiPCT were not better than the comparison groups (**Table 9-12**). Moreover, while beneficiaries in MiPCT practices had lower rates of avoidable catastrophic events and lower acute admissions than did similar patients in non-PCMH practices over the 2-year period, most other outcomes over that period were not significantly different (**Table 9-13**).

Only a few measures of access to care and care coordination had statistically significant differences between beneficiaries with multiple chronic conditions in MiPCT practices and beneficiaries in comparison group PCMHs and non-PCMH practices (**Table 9-14**). Over the 2-year period, only the measure of patients receiving follow-up visits within 14 days of hospital discharge compared to non-PCMH comparison group practices and the percentage of patients with 30-day unplanned readmissions were significantly different between MiPCT patients and PCMH comparison group practices. Other measures and comparisons were not statistically significant.

We conducted additional analyses to gain a better understanding of special populations that had reductions in the rate of growth in Medicare expenditures relative to either the PCMH or non-PCMH comparison group. These focused on beneficiaries with behavioral health conditions, disabled Medicare beneficiaries, beneficiaries dually eligible for Medicare and Medicaid, and beneficiaries who are non-White. On most measures, there was no statistically significant difference between the MiPCT beneficiaries and the comparison groups.

It was notable that beneficiaries with behavioral health conditions assigned to MiPCT practices had slower growth in total Medicare expenditures and acute-care expenditures (**Table 9-17**). For disabled Medicare beneficiaries, acute-care expenditures overall for the 2-year period were not statistically significantly different relative to the PCMH comparison group, but expenditures for ER visits not leading to a hospitalization and all-cause hospital admissions rates were lower (**Table 9-19**). For dually eligible beneficiaries, acute-care and ER expenditures were not lower overall for the 2-year period relative to the PCMH comparison group, but they showed a trend towards slower growth. All-cause admissions were lower, as was specialty physician use. Finally, for non-White Medicare beneficiaries, while overall acute-care expenditures relative to the PCMH comparison group were not lower over the 2-year period, there was a trend toward slower growth (**Table 9-21**). Further, expenditures on ER visits not leading to hospitalization were reduced, as were specialty physician use and 30-day unplanned readmissions.

## **9.8 Discussion of Michigan's Year Two Findings and Next Steps**

In Year Two, MiPCT continued to have high political support at the state level and consistent project leadership. Within practices, care managers were mostly in place at the time of the second site visit, and they reported feeling more a part of the practices than in Year One. Although care managers reported having contact with relatively few patients overall, there was some evidence that their work had targeted patients most in need. For example, MiPCT was associated with positive outcomes relative to comparison groups with an increased rate of follow-up visits within 14 days for patients with a live discharge (perhaps the result of care managers' focus on care transitions) (**Table 9-7**).

The most significant change in Michigan's initiative since the previous site visit was the addition of a new payer, Priority Health, which was most active in the western part of the state. The activities of another commercial payer, BCBSM, to promote primary care medical homes complemented, rather than competed with, MiPCT. For example, BCBSM began offering a PCMH-neighbor designation to specialists that had relationships with medical homes. BCBSM also strengthened guidelines on communication and referral with specialists required to receive the medical home designation, required for practices to continue their participation in MiPCT.

Some MiPCT activities intended to support practices were still in the preliminary stages of implementation in Year Two. For example, MiPCT's partnership with MiHIN to deliver real-time electronic notifications to practices on all hospital admissions, discharges, and transfers was not yet widely available to practices by the end of 2013. Data dashboards on practices' patient risk scores, distributed by the Michigan Data Collaborative, added data from BCBSM, Blue Care Network and Priority Health in 2013, to what already was available for Medicare and Medicaid patients. Practices reported difficulty, however, in using the dashboard and other all-payer lists of MiPCT-eligible patients to focus their efforts on the highest-risk eligible patients. Perhaps for these reasons, the findings on unplanned readmissions and ER visits not leading to hospitalization were not all in the expected direction, despite successes in identifying patients postdischarge for follow-up visits.

One goal of MiPCT was to increase access to primary care services by extending office hours and increasing the percentage of a practice's schedule that could be filled by same-day appointments. With the exception of some positive findings for specific years with regard to utilization of primary care visits and specialty visits, however, most differences related to access were not significant when looking at Years One and Two overall (*Table 9-7*).

Cost savings for MiPCT were hypothesized to come from reduced acute-care and ER utilization and expenditures. Thus, the claims analysis findings of slowed growth in expenditures for acute-care for beneficiaries assigned to MiPCT practices was in the expected direction, compared with other PCMH practices. It remains to be seen whether similar significant differences emerge as compared to the non-PCMH practices in Year Three (*Table 9-8*). Additionally, there was no overall change in the rates of ER visits not leading to hospitalization (however, there was a trend towards more visits) or ER expenditures among beneficiaries assigned to MiPCT practices as compared with PCMH and non-PCMH practices (*Table 9-9*). Nonetheless, it seems that the MiPCT strategy of focusing on high medical care users through case management was associated with controlling acute-care and post-acute-care expenditures to some degree. In terms of a closely related, but separate, budget neutrality calculation, preliminary analysis of the first 2 years of the demonstration suggests that MiPCT was saving money for Medicare compared to medical home practices not participating in the MAPCP Demonstration.

MiPCT did not target any specific population for special interventions or services. Nonetheless, the embedded care managers in MiPCT practices—a central feature of the project—focused their attention on coordinating care especially for patients at high risk for acute-care utilization and for those with multiple chronic conditions, including patients with behavioral health needs.

Overall, there were some statistically significant results for the MiPCT beneficiaries, especially relative to the PCMH comparison group. Most notable was the finding that MiPCT patients with multiple chronic conditions had a slower rate of growth in Medicare expenditures over the 2-year period, relative to both the PCMH and non-PCMH comparison groups (*Table 9-11*). This group received the most attention in the demonstration. In addition, slower rates of growth in expenditures over the 2-year period relative to the PCMH comparison group also were found for beneficiaries who were Medicare eligible because of disability, dually eligible beneficiaries, and non-White beneficiaries. Also, for beneficiaries with multiple chronic conditions and those with behavioral health conditions, growth in total expenditures was significantly slower relative to the non-PCMH comparison group. Few of the other measures examined among beneficiaries with multiple chronic conditions or those with behavioral health conditions showed consistent patterns of improved outcomes.

Looking ahead, one remaining question is whether the care managers will see sufficient numbers of patients to make additional progress in improving quality outcomes and reductions in readmissions and expenditures. Although there were positive findings with regard to process measures, such as follow-up visits within 14 days postdischarge and receiving an HbA1c test (for patients with diabetes), it is uncertain whether those processes would convert to such outcomes as reduced hospital utilization. Care managers' potential for success may lie in identifying high-risk beneficiaries and providing the services that will keep them healthy and prevent unnecessary use of hospital and other services. As MiPCT matures—especially its systems for delivering ADT notifications and data dashboards—care managers may have more tools at their disposal to improve their effectiveness and efficiency with their patient populations.

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## CHAPTER 10

### PENNSYLVANIA

In this chapter, we present qualitative findings related to the implementation of the Chronic Care Initiative (CCI), Pennsylvania's preexisting regional multi-payer initiative, which added Medicare as a payer to implement the MAPCP Demonstration and ended on December 31, 2014. We report qualitative findings from our second of three annual site visits to Pennsylvania, as well as quantitative findings using administrative data for Medicare fee-for-service (FFS) beneficiaries to report characteristics of beneficiaries and the association of the demonstration with changes in the five outcome domains described in *Section 1.1.2*. We also report characteristics of practices participating in the state initiative.

For the second site visit, which occurred October 22 through 24, 2013, three teams traveled to the state capital (Harrisburg) and two regions in the MAPCP Demonstration (in the northeast, centered around the Scranton area, and in the southeast, Philadelphia and the surrounding suburbs). The site visit focused on changes and implementation experiences occurring since the last site visit, in October 2012. During the site visit, we interviewed providers, nurses, and administrators from participating patient-centered medical homes (PCMHs) to learn about the perceived effects of the demonstration in the past year on practice transformation, quality, patient experience with care, and effectiveness after Medicare's entrance. We met with key state officials involved with the implementation of the MAPCP Demonstration to learn how CCI, including the payment model and other efforts, such as learning collaboratives to support practice transformation, were progressing and if any changes were made to meet performance goals. We also met with payers to hear about their experiences with implementation and to learn whether or not payments to practices were perceived as effective in producing desired outcomes or whether modifications were warranted. Last, we met with patient advocates and provider organizations to learn if they had observed improvements in beneficiary experience with care and any changes in the delivery of care.

This chapter is organized by major evaluation domains. *Section 10.1* reports state implementation activities, characteristics of practices, and demographic and health status characteristics of Medicare FFS beneficiaries participating in CCI. *Section 10.2* reports practice transformation activities. Subsequent sections report findings for the five evaluation domains related to outcomes: quality of care, patient safety, and health outcomes (*Section 10.3*); access to care and coordination of care (*Section 10.4*); beneficiary experience with care (*Section 10.5*); effectiveness as measured by health care utilization, expenditures, and Medicare budget neutrality (*Section 10.6*); and special populations (*Section 10.7*). The chapter concludes with a discussion of the findings (*Section 10.8*).

#### 10.1 State Implementation

In this section, we present findings related to the implementation of CCI and changes made by the state, practices, and payers in the second year of its MAPCP Demonstration. We focus on providing information related to the following implementation evaluation questions:

- Over the past year, what major changes were made to the overall structure of the MAPCP Demonstration?

- Were any major implementation issues encountered over the past year and how were they addressed?
- What external or contextual factors affected implementation?

The state profile in **Section 10.1.1** of this report, which describes the status of major features of the state's initiative at the time of the report and the context in which it operates, drew on a variety of sources, including quarterly reports submitted to the Centers for Medicare & Medicaid Services (CMS) by Pennsylvania CCI project staff; monthly CCI-CMS calls; evaluation team members; news articles; state and federal Web sites; and the site visit conducted in October 2013. **Section 10.1.2** presents a logic model reflecting our understanding of the link between specific elements of CCI and expected changes in outcomes. **Section 10.1.3** presents key findings gathered from the site visit regarding the implementation experience of state officials, payers, and providers during the second year of the MAPCP Demonstration. We conclude this section with lessons learned during the first 2 years of the MAPCP Demonstration (**Section 10.1.4**).

### **10.1.1 Pennsylvania State Profile as of October 2013 Evaluation Site Visit**

Planning for CCI began in 2006 as an initiative of Pennsylvania Governor Ed Rendell's Office of Health Care Reform. Phase I of CCI (2008–2011) rolled out in seven regions of the state, starting with the southeastern Pennsylvania region in May 2008. Phase I combined elements of the PCMH model and Wagner's Chronic Care Model (Wagner et al., 2001), a model for providing high-quality care to patients with chronic illnesses that emphasized collaboration and patient self-management. The seven regions participating in Phase I featured varying program models, with different requirements for practices to obtain National Committee for Quality Assurance (NCQA) Physician Practice Connections (PPC®) PCMH™ recognition, payments to practices, and other features.

In January 2011, the incoming governor (Tom Corbett) moved the initiative from the Governor's Office of Health Care Reform (GOHCR) to the state Department of Health (DOH), which continued to administer the initiative. Phase II of CCI began on January 1, 2012, when Medicare joined as a payer in the northeast and southeast Pennsylvania regions. Under Phase II of CCI, the northeast and southeast regions adopted a single payment methodology and aligned requirements and learning collaborative activities for participating practices.

**State environment.** The GOHCR and Phase I of CCI were established under the administration of the previous governor, Ed Rendell (2003–2011), a Democrat. With the inauguration of current Governor Tom Corbett, a Republican, in 2011, GOHCR was eliminated, and the initiative moved to DOH. CCI was located within DOH's new Center for Practice Transformation and Innovation. DOH was advised by the CCI Executive Steering Committee, which included payer and practice representatives from both participating regions. The transition in state leadership and move to DOH caused some administrative difficulties and delays in program implementation, resulting in the postponement of Medicare participation until January 2012.

CCI saw significant changes in payer participation since the end of Phase I in 2011. Phase I of CCI used a regulatory approach to compel insurer participation, requiring Medicaid managed care organizations (MCOs) to participate as a condition of their contracts with the Pennsylvania Department of Public Welfare (DPW) and pressuring commercial payers to participate through an executive order from the Rendell administration. The Corbett administration adopted a more voluntary approach to payer participation for Phase II of CCI, removing participation requirements from MCO contracts and no longer compelling commercial payer participation. Since the end of Phase I of CCI, several payers declined to join Phase II or withdrew from the initiative:

- In December 2011, the withdrawal of Capital Blue Cross, a dominant commercial payer in the south central region, resulted in the region's failure to comply with MAPCP Demonstration requirements and CMS's decision not to include the south central region in the MAPCP Demonstration as originally planned.
- In the northeast, Blue Cross of Northeastern Pennsylvania, a major commercial payer in the region, withdrew from the initiative at the end of 2012. Medicaid (DPW) participation in the northeast region was inconsistent. DPW agreed to participate in September 2012 to meet the terms of the state's MAPCP Demonstration participation agreement, which required Medicaid participation in each region. Medicaid FFS payments for the January 2012 through February 2013 period, however, were not made until the first quarter of 2013. The three new Medicaid managed care plans operating in the northeast region since March 2013 (Geisinger Health Plan, Keystone First, and Coventry Cares) declined to join the initiative.
- In the southeast region, UnitedHealthcare and Coventry Cares declined to join Phase II of CCI in early 2012, despite previous plans to do so. Since the start of Phase II, three additional southeast Pennsylvania payers withdrew or announced plans to withdraw. Health Partners, a Medicaid MCO in the southeast region, ended participation in March 2013; Cigna announced in November 2013 that it would withdraw from the initiative at the end of 2013; and Aetna Better Health announced plans to withdraw in March 2014.

Pennsylvania had several relevant programs operating in the northeast and southeast regions and across the state that potentially affected health outcomes for CCI participants and the comparison population:

- Geisinger Health System, a major insurer and delivery system in northeast Pennsylvania, participated in CCI as a payer and provider and also participated in Medicare's Physician Group Practice (PGP) Transition Demonstration. Seven Geisinger-owned practices participated in both CCI and, until 2012, the PGP Demonstration. These practices were not eligible to receive shared savings payments from two Medicare demonstrations. As a result, they were eligible to receive shared savings payments from Medicare under the PGP Transition Demonstration, but not under the MAPCP Demonstration.

- Since 2002 and continuing through 2013, Health Quality Partners provided care management and disease management to Medicare FFS beneficiaries with chronic conditions in southeast Pennsylvania through the Medicare Coordinated Care Demonstration.
- Renaissance Health Network, an independent practice association in the southeast region, was selected to participate in the Center for Medicare & Medicaid Innovation (CMMI) Pioneer accountable care organization (ACO) model initiative in December 2011.
- Several payers in participating regions, including Blue Cross of Northeastern Pennsylvania and Geisinger, also operated their own medical home and pay-for-performance initiatives to incentivize efficient and high-quality care within their provider network. The extent of CCI practices' participation in individual payers' medical home programs was not known.
- Pennsylvania received \$17 million in Health Information Technology for Economic and Clinical Health (HITECH) funding to support the development of a statewide health information exchange (HIE). The state also received funding for two Regional Extension Centers. In addition, the Keystone Beacon Community, which used HITECH funding and was led by Geisinger Health System, focused on improving care coordination through use of health information technology (health IT) in five Pennsylvania counties: Columbia, Montour, Northumberland, Snyder, and Union. Though the Keystone Beacon Community service area did not overlap with any regions participating in Phase II of CCI, Columbia, Montour, and Union were comparison group counties for the MAPCP Demonstration evaluation.
- In February 2013, Pennsylvania was awarded a \$1.6 million State Innovation Models (SIM) Initiative Model Design grant from CMMI to develop a State Health Care Innovation Plan. Planning for Pennsylvania's SIM initiative was based at the DOH Center for Practice Transformation and Innovation, which also housed CCI, and included a focus on building primary care infrastructure in the state.

**Demonstration scope.** CCI operated in the northeast and southeast Pennsylvania regions. The northeast region is generally rural, with Geisinger, a large integrated delivery system, as a dominant player in care delivery and insurance in the region. The southeast region, which included Philadelphia and much of the surrounding metropolitan area, featured a larger number of Medicaid beneficiaries and a more crowded and competitive delivery system and insurance environment. As of December 31, 2013, seven payers were participating in CCI: Medicare, Independence Blue Cross, Aetna, Aetna Better Health,<sup>1</sup> Cigna, Keystone First, Geisinger Health Plan, and Independence Blue Cross. Several insurers participated on behalf of multiple lines of business, including commercial, Medicaid managed care, and Medicare Advantage. At the time

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<sup>1</sup> Aetna Better Health is a Medicaid MCO, while Aetna operates private insurance plans.

of this report, however, Cigna and Aetna planned to drop out of CCI in December 2013 and March 2014, respectively.

**Table 10-1** shows participation by practices, providers, and individuals in Pennsylvania's CCI at the end of the first and second years of the MAPCP Demonstration. The number of participating practices with attributed Medicare FFS beneficiaries was 57 at the end of Year One (December 31, 2012); at the end of Year Two (December 31, 2013) the number of practices was 55—a decrease of 4 percent. During the same time period, the number of providers at these practices increased by less than 1 percent, from 385 to 386. The cumulative number of Medicare FFS beneficiaries ever participating in the demonstration for 3 months or more was 28,236 at the end of the first year and 36,360 at the end of the second year—an increase of 29 percent.

**Table 10-1**  
**Number of practices, providers, and Medicare fee-for-service beneficiaries participating in the Pennsylvania CCI**

Participating entities	Number as of December 31, 2012	Number as of December 31, 2013
CCI practices <sup>1</sup>	57	55
Participating providers <sup>1</sup>	385	386
Medicare FFS beneficiaries <sup>2</sup>	28,236	36,360

NOTES:

- CCI practices included only those practices with attributed Medicare FFS beneficiaries, and participating providers are the providers associated with those practices.
- The numbers of Medicare FFS beneficiaries are cumulative, representing the number of Medicare FFS beneficiaries ever assigned to participating CCI practices and participating in the demonstration for at least 3 months.

ARC = Actuarial Research Corporation; CCI = Chronic Care Initiative; FFS = fee-for-service; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCES: <sup>1</sup> ARC MAPCP Demonstration Provider File; <sup>2</sup>ARC Beneficiary Assignment File. (See Chapter 1 for more detail about these files.)

In terms of all-payer participants, the state reported that the number of individuals enrolled in CCI was 198,733 at the end of Year One (December 31, 2012), and 166,082 at the end of Year Two (December 31, 2013)—a decrease of 16 percent. The state anticipated that 298,962 patients would participate in the northeast and southeast regions, including 60,565 Medicare beneficiaries. As of December 31, 2013, Pennsylvania had met 56 percent of its estimate for participants across all payers, and 49 percent of its estimate for Medicare beneficiaries. The withdrawal of Cigna in December 2013 and Aetna Better Health in March 2014 resulted in a drop in total participant numbers; as of December 31, 2013, Cigna had 2,092 members and Aetna Better Health 5,806 members participating in the initiative.

**Table 10-2** displays the characteristics of the practices with attributed Medicare FFS beneficiaries participating in the CCI as of December 31, 2013. There were 55 participating PCMHs with an average of 7 providers per practice. All practices were either office-based (89%) or federally qualified health centers (FQHCs) (11%). Nearly all practices (96%) were located in metropolitan counties.

**Table 10-2**  
**Characteristics of practices participating in the Pennsylvania CCI as of December 31, 2013**

Characteristic	Number or percent
Number of practices (total)	55
Number of providers (total)	386
Number of providers per practice (average)	7
Practice type (%)	
Office based	89
Federally qualified health center	11
Critical access hospital	0
Rural health clinic	0
Practice location type (%)	
Metropolitan	96
Micropolitan	4
Rural	0

ARC = Actuarial Research Corporation; CCI = Chronic Care Initiative; MAPCP = Multi-Payer Advanced Primary Care Practice.

SOURCE: ARC Q10 MAPCP Demonstration Provider File. (See Chapter 1 for more details about this file.)

In **Table 10-3**, we report demographic and health status characteristics of Medicare FFS beneficiaries assigned to participating CCI practices during the first 2 years of the MAPCP Demonstration.. Beneficiaries with fewer than 3 months of eligibility for the demonstration were not included in our evaluation or this analysis. Of the beneficiaries who were assigned to CCI practices during the first 2 years of the MAPCP Demonstration, 22 percent were under the age of 65, 46 percent were between the ages of 65 and 75, and just under a quarter were between the ages of 76 and 85, with a mean beneficiary age of 69 years. Eighty-one percent of beneficiaries were White, 85 percent were urban dwelling, and 60 percent were female. Twenty-two percent were dually eligible for Medicare and Medicaid, and 29 percent were eligible for Medicare originally because of disability. One percent of beneficiaries had end-stage renal disease (ESRD), and 1 percent resided in a nursing home during the year before their assignment to a CCI practice.

**Table 10-3**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Pennsylvania CCI from January 1, 2012, through December 31, 2013**

Demographic and health status characteristics	Percentage or mean
Total beneficiaries	36,360
Demographic characteristics	22
Age < 65 (%)	
Ages 65–75 (%)	46
Ages 76–85 (%)	22
Age > 85 (%)	10
Mean age	69

(continued)

**Table 10-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries**  
**participating in the Pennsylvania CCI from January 1, 2012, through December 31, 2013**

Demographic and health status characteristics	Percentage or mean
White (%)	81
Urban place of residence (%)	85
Female (%)	60
Dual eligibles (%)	22
Disabled (%)	29
End-stage renal disease (%)	1
Institutionalized (%)	1
Health status	
Mean HCC score groups	1.05
Low risk (< 0.48) (%)	24
Medium risk (0.48–1.25) (%)	52
High risk (> 1.25) (%)	25
Mean Charlson Index score	0.87
Low Charlson Index score (= 0) (%)	62
Medium Charlson Index score ( $\leq 1$ ) (%)	18
High Charlson Index score (> 1) (%)	20
Chronic conditions (%)	
Heart failure	4
Coronary artery disease	12
Other respiratory disease	9
Diabetes without complications	17
Diabetes with complications	5
Essential hypertension	32
Valve disorders	3
Cardiomyopathy	2
Acute and chronic renal disease	7
Renal failure	3
Peripheral vascular disease	2
Lipid metabolism disorders	16
Cardiac dysrhythmias and conduction disorders	9
Dementias	1
Strokes	1
Chest pain	4
Urinary tract infection	4

(continued)

**Table 10-3 (continued)**  
**Demographic and health status characteristics of Medicare fee-for-service beneficiaries participating in the Pennsylvania CCI from January 1, 2012, through December 31, 2013**

Demographic and health status characteristics	Percentage or mean
Chronic conditions (%) (continued)	
Anemia	6
Malaise and fatigue (including chronic fatigue syndrome)	1
Dizziness, syncope, and convulsions	5
Disorders of joint	7
Hypothyroidism	5

**NOTES:**

- Percentages and means are weighted by the fraction of the year that a beneficiary met MAPCP Demonstration eligibility criteria.
- Demographic and health status characteristics are calculated using the Medicare Enrollment Data Base and claims data for the 1-year period before a Medicare beneficiary first was attributed to a PCMH after the start of the demonstration.
- Urban place of residence is defined as those beneficiaries living in Metropolitan or Micropolitan Statistical Areas defined by the Office of Management and Budget.
- Dual eligibles are beneficiaries who are dually eligible for Medicare and Medicaid

CCI = Chronic Care Initiative; HCC = Hierarchical Condition Category; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

SOURCE: Medicare claims files.

Using three different measures—Hierarchical Condition Category (HCC) score, Charlson Comorbidity Index, and diagnosis of 22 chronic conditions—we describe beneficiaries’ health status during the year before their assignment to a CCI practice. Medicare beneficiaries assigned to a CCI practice had a mean HCC score of 1.05, meaning that they were 5 percent sicker than the average Medicare FFS beneficiary or, in other words, that they were predicted to be 5 percent more costly in the subsequent year than an average Medicare FFS beneficiary. Sixty-two percent of the beneficiaries had a low score (zero) on the Charlson Comorbidity Index, indicating that they did not receive medical care for any of the 18 clinical conditions in the index in the year before their first assignment to a participating CCI practice.

The most common chronic conditions were hypertension (32%), diabetes without complications (17%), lipid metabolism disorders (16%), and coronary artery disease (12%). Less than 10 percent of beneficiaries were treated for any of the other chronic conditions.

**Practice expectations.** During Phase I of CCI, participating practices were required to achieve NCQA PPC® PCMH™ 2008 recognition, as well as meet additional criteria beyond those specified in the NCQA PPC® PCMH™ program. Three optional NCQA PPC® PCMH™ elements, covering areas such as patient engagement and self-management, care coordination and management by nonphysician staff, and the development and use of care plans, also were required for participating practices. In the southeast region, practices were required to achieve NCQA PPC® PCMH™ recognition by the end of the first year of Phase I. Per member per month (PMPM) payment rates for practices in the southeast region also were tied to recognition levels, with higher recognition levels associated with higher payments. In the northeast region, practices were required to achieve recognition by the third year of Phase I.

To participate in Phase II of CCI, practices were required to renew their NCQA PPC® PCMH™ recognition when it expired (i.e., 3 years after it was awarded). Practices were undergoing NCQA PPC® PCMH™ 2011 assessment on a rolling basis and were required to satisfy additional criteria related to previsit preparations, individualized care plans, population management, and other care management activities. Based on December 2013 NCQA PPC® PCMH™ recognition information provided by the state, the practices participating in Phase II had significant medical home capacity. Thirty-nine practices (75%) had been recognized as Level 3 medical homes. Of the remaining practices participating in Phase II, most had Level 2 recognition, and only a few had Level 1 recognition.

In July 2012, CCI implemented a “practice performance assessment framework” as an additional tool for evaluating practice transformation and quality. Program leaders updated the framework in July 2013 to align the clinical performance measures with those used to calculate shared savings more closely. The state and private payers gathered additional information about practice transformation annually through care management audits, a practice transformation self-assessment tool, monthly practice narratives that had to be completed and submitted to the practice coach (see ***Support to Practices***, below), and clinical data from practice registries managed by the Pennsylvania Academy of Family Physicians (PAFP).

The framework measured practice performance across three areas: clinical performance improvement, transformation, and engagement. Within the clinical performance improvement domain, practices had to meet annual performance targets on half of both process and outcome measures included in the program’s measure set. Practices had to demonstrate transformation by completing a self-assessment and passing site audits to assess care management systems. For example, all practices were required to use care managers to coordinate care for high-risk patients, and they were audited annually for their progress in this area. Within the engagement domain, program leadership tracked practice participation in learning collaborative activities and practices’ fulfillment of data reporting requirements. The requirement that practices achieve NCQA PPC® PCMH™ recognition also fell within the engagement domain. Practices that did not pass the state audit or assessment had to develop a 30-day corrective plan of action, and they were reaudited or reassessed at the end of the 30-day period.

**Support to practices.** Practices participating in Phase II of CCI received two PMPM payments from participating payers that varied by initiative year and patient age (***Table 10-4***):

- Payments for physician coordinated care oversight services
- Payments to fund care coordinators that varied based on patient age

Both payments declined by 15 percent each year over the course of the 3-year contract period to account for larger initial investments required to support early transformation and care management efforts. Between January 1, 2012, and September 30, 2013, CCI practices received a total of \$3,368,177 in payments from Medicare.

**Table 10-4**  
**PMPM payments to participating practices**

Service	Year One	Year Two	Year Three
Physician coordinated care oversight services	\$1.50	\$1.28	\$1.08
Coordinated care fees (vary based on patient age)			
Age ≤ 18	\$0.60	\$0.51	\$0.43
Age 19–64	\$1.50	\$1.28	\$1.08
Age 65–74	\$5.00	\$4.25	\$3.61
Age ≥ 75	\$7.00	\$5.95	\$5.06

PMPM = per member per month.

Practices also were able to receive shared savings payments from participating payers if they demonstrated savings and achieved key quality metrics. Participating commercial payers calculated net savings annually by comparing cost trends for beneficiaries assigned to the practice to cost trends across the payers' book of business. CMS calculated net savings for Medicare beneficiaries in CCI differently, comparing cost trends among CCI practices at the regional level to a comparison group of PCMH practices not participating in CCI. CMS calculated shared savings at the regional level, because average expenditures for an individual practice's patient panel were highly variable. (The financial performance of individual practices was not calculated.) The total PMPM payments to the practice were then subtracted from the calculated net savings. If there were any savings, actual payouts were determined by each practice's performance on quality and utilization metrics.

The shared savings methodology had several adjustments and exclusions designed to protect practices and payers from variation in cost and quality resulting from different patient populations or chance, including risk adjustment, practice groupings, and, for some payers, exclusion of high-cost outliers. Each payer separately grouped practices, calculated savings, and distributed any shared savings for their members.

The percentage of savings practices were eligible to share increased each year as PMPM payments to practices dropped; income from shared savings was intended to balance decreases in PMPM payments over the course of the 3-year contract period. Practices were eligible to share in a maximum of 40 percent of net savings in Year One, 45 percent in Year Two, and 50 percent in Year Three. Shared savings payments also varied by practices' achievement of quality metrics. Required quality metrics differed for adult and pediatric practices, but both included three domains—prevention, management of chronic conditions, and clinical care management.

The first performance year ended December 31, 2012, with limited savings found for several practices in the northeast region and no savings found for southeast region practices. As of December 31, 2013, CMS had not completed shared savings calculations for the first performance year.

CCI supported practices through learning activities, including in-person learning collaborative sessions and monthly phone calls with a practice coach tailored for the needs of adult practice teams, pediatric practice teams, and practice-based care managers. Practices also received regular performance reports on clinical quality metrics, as well as medical home

transformation and engagement in CCI activities, through a Web-based portal run by the PAFP and the practice performance assessment framework process. (See **Section 10.2.2** for details.)

### 10.1.2 Logic Model

**Figure 10-1** is a logic model for Phase II of CCI. The first column describes the context for the demonstration, including its scope, other state, federal, and private initiatives, and key features of the contextual landscape—such as the northeast region’s shift from Medicaid FFS to managed care. The demonstration context affected the implementation of CCI, which incorporated several strategies to promote practice transformation to a medical home (e.g., requiring practices to recertify as a medical home after 3 years using NCQA PPC® PCMH™ 2011, requiring practices to submit monthly quality measure data). Meeting the state’s certification standards was intended to demonstrate that a practice had adopted new care processes. Beneficiaries served by these transformed practices were expected to have better access to more coordinated, safer, and higher-quality care, as well as a better patient experience with care and greater engagement in decisions about treatments and management of their conditions. These improvements were expected to promote more efficient utilization of health care services, including reductions in duplicative care, unnecessary emergency room (ER) visits, hospital admissions, and readmissions within 30 days. These changes in utilization were expected to produce further changes, including improved health outcomes, improvements in beneficiary experience with care, and reductions in total per capita expenditures—resulting in savings or budget neutrality for the Medicare program and cost savings for other payers involved in the initiative. Improved health outcomes, in turn, were expected to lead to reduced utilization.

### 10.1.3 Implementation

This section uses primary data gathered from the site visit in October 2013 and other sources and presents key findings from the implementation experience of state officials, payers, and providers to address the evaluation questions described in **Section 10.1**.

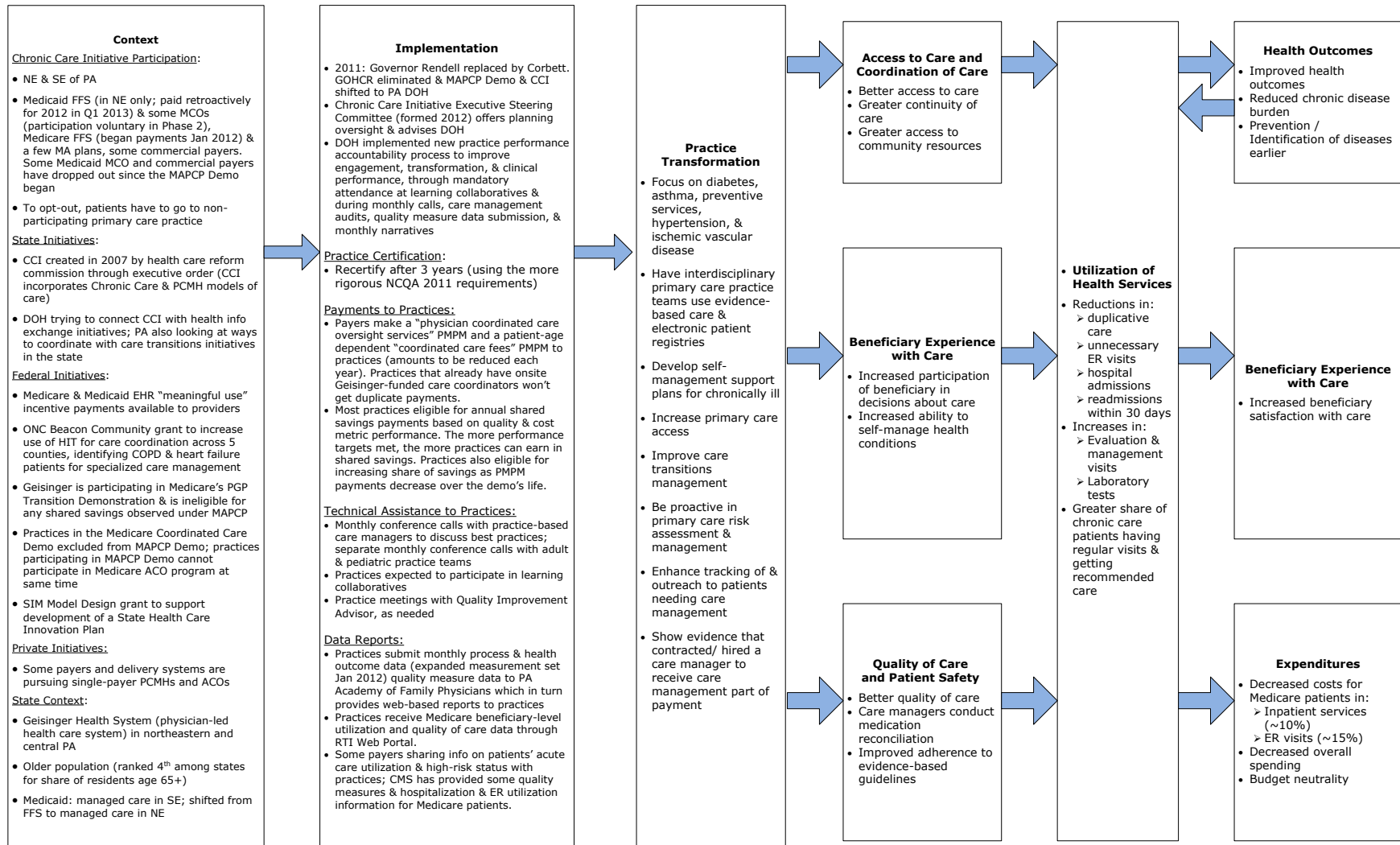
#### Major Changes During the Second Year

**Payer attrition.** Many stakeholders identified persistent payer attrition, which continued to shrink the scope of CCI, as the most significant change to the initiative during 2013. The withdrawal of Blue Cross of Northeastern Pennsylvania at the end of 2012 and Health Partners and Cigna during 2013 led to a steep drop in the number of participating patients across both regions. As noted in **Section 10.1.1**, all-payer patient participation fell by 16.4 percent from December 31, 2012, to December 31, 2013.

Medicaid participation was particularly limited and continued to drop in 2014. Before the northeast’s transition from Medicaid FFS to capitated managed care in March 2013, DPW was reluctant to commit to Medicaid FFS participation in the region. DPW did not make payments for the January 2012-February 2013 period until the first quarter of 2013, a move stakeholders agreed was driven by budget pressures. The switch from Medicaid FFS to capitated managed care in the northeast in March 2013 resulted in the loss of Medicaid participation in that region; as of December 2013, none of the three Medicaid managed care plans in the northeast had agreed to participate in CCI, despite participation by one of the plans, Geisinger, on behalf of other lines

**Figure 10-1**  
**Logic model for Phase II Pennsylvania CCI**

10-12



ACO: Accountable Care Organization; CCI: Chronic Care Initiative; CMS: Centers for Medicare and Medicaid Services; COPD: Chronic Obstructive Pulmonary Disease; DOH: Department of Health; EHR: Electronic Health Record; ER: Emergency Room; FFS: Fee-for-Service; GOHCR: Governor's Office of Health Care Reform; HIT: Health Information Technology; MA: Medicare Advantage; MCO: Managed Care Organization; NCQA: National Committee for Quality Assurance; NE: Northeast; ONC: Office of the National Coordinator for Health Information Technology; PA: Pennsylvania; PCMH: Patient-Centered Medical Home; PGP: Physician Group Practice; PMPM: Per Member Per Month; SE: Southeast; SIM: State Innovation Models

of business. In the southeast region, Aetna Better Health, one of two remaining Medicaid plans participating, also announced plans to exit the demonstration in early 2014. The remaining Medicaid MCOs in the southeast, Keystone First, also announced its departure from the demonstration in 2013, though the plan chose to continue participation after meeting with another payer and leaders from local practices. Payers stated a variety of reasons for leaving the demonstration, including the significant financial investment and effort required to participate in CCI and meet the initiative's reporting requirements; lack of internal or external data suggesting significant savings or improvements in quality; and a desire to participate in ACOs or invest in single-payer programs that affected more of their patients and practices and over which payers had greater control.

**Improved data tools.** Practices saw some changes in accessing data to support patient care. Improvements were made to CCI's practice portal, administered by the PAFP, resulting in a smoother data entry process and more timely feedback for practices. Despite these changes, practices remained concerned they were not getting the needed data in a timely manner.

**Practice expectations and support for practice transformation.** As in 2012, state officials and others remained skeptical that NCQA recognition contributed to improved clinical quality, patient outcomes, or practice workflow, and they described the NCQA PPC® PCMH™ recognition process as unnecessarily burdensome for practices. Program leaders, practices, and payers agreed to changes in the practice performance assessment framework beginning in September 2013, aligning quality metrics more closely with those used to determine shared savings. Practices continued to participate in learning collaboratives, though budget cuts at the state level prompted reductions in the initiative's contract with the consultant providing practice coaching. Support was provided telephonically, with fewer site visits to practices.

## **Major Implementation Issues During the Second Year**

**Payer attrition.** Payer attrition, described above, had a significant impact on the consensus and cohesion among CCI stakeholders. State officials, though, emphasized that the financial impact of payer departures on most individual practices had been minimal. Several payers that had withdrawn had been participating on behalf of relatively small populations, and many practices served patients with a diverse insurance mix, so the loss of smaller payers did not have a major impact. Many interviewees expressed disappointment at the continued loss of payers, while recognizing the challenges of maintaining a strong coalition. As one state official put it, "It is hard to hold together a voluntary coalition of payers who are competing with one another."

**Lack of shared savings.** Shared savings calculations for 2012, the first year of Phase II of CCI, were completed in fall 2013 for commercial payers at the practice level. The results, which indicated that no practices in the southeast and only a handful of practices in the northeast generated savings, also contributed to dissatisfaction, particularly among practices. One state official reported, "The reaction [to the 2012 shared savings calculations] was shock... [Practices and payers] have invested an incredible amount of money—millions of dollars—in CCI. They desperately wanted savings, but there weren't any." Many practices believed that CCI payment rates were inadequate to fund required practice transformation, reporting, and care management activities, particularly in light of the absence of shared savings payments and decreased PMPM payments in 2014. One practice left the initiative during the quarter ending September 30, 2013,

and, as of December 31, 2013, three additional practices had announced plans to end participation in CCI at the end of 2013 or the first quarter of 2014. State officials expressed concern that the lack of shared savings for 2012 would result in the withdrawal of additional practices, especially when reductions in PMPM payments for Year Three of Phase II were implemented in January 2014.

**Lack of hospital and specialist engagement.** Program leaders worked to increase communication with hospitals and to provide timely data from hospitals on admissions, discharges, and transfers via a multi-payer aggregated utilization report piloted in late 2013. Despite these efforts, payers and other stakeholders expressed continued frustration with the initiative's lack of connections with hospitals and specialists. Lack of communication between primary care practices and hospitals was believed to have hindered care management and care transitions. This was particularly true in the southeast region, where many participating practices were small and unaffiliated with a major hospital or delivery system.

**Waning enthusiasm among participating practices.** Some respondents felt that CCI had continued for too long and was losing momentum. While practice transformation took time, sustaining enthusiasm and engagement in the fifth or sixth year of participation for many practices was extremely difficult. Many respondents were concerned about practice morale and potential withdrawal from the demonstration because of developments like payer withdrawals, lack of shared savings payments, lack of transparency about the payment model, and forthcoming reductions in PMPM payments. One state policymaker noted that small practices in particular were feeling fatigued and that keeping those practices engaged was a challenge. Practices were eager to know whether CCI had worked and if it would become a permanent program or be replaced by another type of initiative (e.g., ACOs, another medical home model initiative).

## **External and Contextual Factors Affecting Implementation**

**Impact of changes in state leadership.** The change in governors in 2011 resulted in several changes to the initiative, discussed in *Section 10.1.1*, one of which was a switch from mandatory to voluntary Medicaid MCO participation in the initiative. This change allowed for significant payer attrition during this phase of the initiative. In 2012, some stakeholders expressed concern that CCI was a low priority for the administration, particularly in comparison to former Governor Ed Rendell's administration, but this was not a major theme of the 2013 site visit.

**Impact of other state health reform initiatives.** In February 2013, Pennsylvania received a SIM Model Design grant from CMMI to support development of a State Health Care Innovation Plan. The DOH Center for Practice Transformation and Innovation, also the home of CCI, led the SIM planning process, though program leaders indicated only limited connections between the two programs. Rather than planning for CCI to continue after Phase II ended in December 2014, state officials and payers felt the state was focused on the SIM plan and “practices are already talking about planning for what comes next.” Stakeholders believed that the state's SIM plan, which proposed that the state build multi-payer “accountable provider organizations,” would likely replace CCI.

**Private payment and delivery reform activity.** Pennsylvania also experienced health system transformation on the private side, with several payers and delivery systems across the state pursuing single-payer medical home programs and ACOs. Some state officials and payers pointed to CCI as a critical foundation for health system transformation in the state: “The Chronic Care Initiative helps practices build capacity to participate in ACOs in the future. The vast majority of practices in the Chronic Care Initiative have built infrastructure, knowledge, and experience that will support them in the future.” Practices expressed significant interest in participating in private medical home and ACO programs, and some had begun to do so.

#### **10.1.4 Lessons Learned**

**Maintaining voluntary payer participation was challenging.** Maintaining voluntary participation and commitment from payers proved particularly challenging in Pennsylvania. CCI struggled to build consensus among stakeholders and retain payer support in the absence of strong, ongoing alignment of goals and interests among payers and between payers and other stakeholders. Without the strong regulatory support provided by the state in Phase I, program leadership had limited ability to compel payers to continue participation. Despite this challenge, the initiative retained some strong supporters within the payer community. As one state official said of participating payers, “The largest ones were early champions of this work, and have been committed to the medical home model for a long time. They are doing a lot on their own, separate from this initiative. This [CCI] affords them the opportunity to be good corporate citizens, but it is also a learning lab for them, and that has value to them.”

**Strong leadership was critical to sustaining an initiative.** Strong leadership, particularly by the state and commercial plans, since they designed the multi-payer effort CMS joined, was critical. Leadership turnover and different approaches on key issues such as payer participation slowed and eventually undermined this effort through plan withdrawals.

**Care management was key to success.** As in 2012, state officials identified care management and a focus on high-risk patients as the key to the initiative’s success in clinical quality improvement. Participating practices saw significantly better performance on clinical measures in 2013. The southeast region, in particular, had substantial improvements in clinical quality as practices hired and trained nurse care managers, required in that region for the first time during Phase II. State officials and payers identified the Practice Performance Assessment Framework as a critical tool in ensuring practice compliance with care management requirements and supporting targeted improvement where necessary.

**Practices struggled to sustain changes without shared savings payments.** While many stakeholders remained confident in the practice model promoted through CCI, some questioned the effectiveness of the CCI Phase II payment methodology in supporting practices in achieving and maintaining this model. The lack of shared savings payments, which were intended to supplement decreasing PMPM payments in the second and third years of the demonstration, raised concerns that practices would be financially unable to support sustained practice transformation efforts. Some respondents also raised concerns that the age-adjusted PMPM rates, intended as a simple alternative to risk adjustment, were an inadequate substitute and penalized practices treating a high proportion of patients with chronic illnesses.

**Practice transformation took time and significant effort.** Many stakeholders identified the time and effort required for true practice transformation as a key lesson learned from CCI, and they considered continued practice engagement in transformation activities as a significant success. Physician champions at the practice level were critical in sustaining practice transformation efforts. As one state official put it, “Practice transformation is not a 6-month process to get NCQA recognition—it is ongoing trial and error that will result in both frustrations and moments of breakthrough and success.”

## **10.2 Practice Transformation**

This section seeks to answer evaluation research questions related to describing the features of the practices participating in Phase II of CCI, identifying changes practices made to take part in CCI and meet participation requirements, describing technical assistance to practices, summarizing views on the payment model, and describing experiences with the demonstration thus far. This section relied upon findings from our second site visit in late 2013 and secondary data provided by the state, emphasizing changes occurring during the year since our initial interviews in late 2012.

Overall, practices had a positive view of the medical home model. Several practice respondents specifically cited as strengths the model’s team-based patient-centered approach and its emphasis on providing more holistic care. Practices worked to transform themselves to be consistent with the model.

Some practices indicated uncertainty about whether their practice would continue to participate in CCI, but noted that was a discussion their practice leadership would have in the near future. Respondents cited several reasons for not continuing, including the amount of work required to engage in the demonstration and reduced payments in the latter years of the demonstration. Practices with a relatively large proportion of Medicaid beneficiaries found care management particularly hard, because these patients had significant social, mobility, and housing concerns outside a practice’s control. Additionally, some respondents noted that specialists and hospitals had no payment incentive to cooperate with primary care practices unless they were part of large systems like Geisinger that had both insurance products and other delivery system components. Finally, some payers had other pay-for-performance incentives that could offer practices nearly as much payment as CCI, but with fewer participation requirements. Reasons cited by some respondents for continuing their participation were that the medical home model was a model they liked; it was good for their patients; they had invested a lot to date; and future efforts, such as ACOs, would require them to function more like advanced primary care practices and medical homes.

### **10.2.1 Changes Practices Made During Year Two**

Practices made several changes related to PCMH recognition, practice transformation, staffing changes, and health IT between the initial interviews in late 2012, and the second interviews in late 2013.

**PCMH recognition and practice transformation.** Phase II of CCI de-emphasized NCQA PPC® PCMH™ recognition and placed greater emphasis on “accountability” at the practice level for transformation, quality, and cost performance. Nonetheless, practices generally

did not like the NCQA PPC<sup>®</sup> PCMH<sup>™</sup> criteria because of the emphasis on infrastructure development and written policies and procedures, and they felt that it was not a strong predictor of medical home performance.

Some respondents—particularly some payers—believed that the practice assessment tool, the care management audits, and the requirements for reporting data to PAFP contributed to practices becoming more engaged and more accountable to standards, deadlines, cost, and quality performance. One practice respondent said that the Phase II emphasis on accountability improved the quality of technical assistance provided by the state, as other practices became more active participants in learning collaboratives (e.g., sharing lessons learned).

Major areas in which many practices reported continued effort to transform their practices in the second year of Phase II of CCI included

- Adding or strengthening the role of care managers and, in some cases, social workers (e.g., targeting high-risk patients for care management services, following up with patients discharged from the hospital, conducting medication reconciliation);
- Having all practice staff, particularly care managers, work at the top of their licenses or take on additional and more advanced roles; and
- Trying to overcome the challenges associated with getting timely data from hospitals, specialists, and payers, so that they could manage and coordinate care of high-risk patients, although these objectives remained challenges.

While practices generally evolved, respondents reported some variation in how much practice transformation occurred and the kinds of practices that were able to implement the medical home model most successfully. Practices in the southeast region needed to make more changes than practices in the northeast region, because they previously operated under a different payment model and did not make as many meaningful changes in their practices. For example, most practices in the southeast were not using care managers, social workers, or other staff to identify and manage high-risk patients. Those practices spent time learning how to integrate care managers and other new types of staff into their workflow and culture. In contrast, most practices in the northeast already had care managers and focused more on sustaining progress and refining their medical home model. One northeast practice, for example, reported that their care manager conducted follow-up visits with patients recently discharged from the hospital more quickly than in the past.

Small, independent practices had a difficult time developing the infrastructure required to serve as a medical home and meeting the administrative requirements of being a medical home (e.g., obtaining NCQA PPC<sup>®</sup> PCMH<sup>™</sup> recognition, fulfilling practice transformation and reporting requirements, spending time at collaborative meetings, expanding electronic health record [EHR] and disease registry capacity, hiring a care manager). Larger practices, particularly those that were part of a larger system, leveraged resources outside of CCI to cover or enhance practice transformation and medical home activities. Several respondents expressed concern about the future viability of small practices and their ability to serve in medical home initiatives in some areas of the state.

Practices faced several challenges related to their transformation and medical home model progress in Phase II of CCI. First, there was a lack of training and support for care managers. Care managers had to sift through many (often long) reports from different payers, and they did not have integrated EHR software for identifying high-risk patients or care guidelines for managing them. In addition, care managers lacked clear guidelines for when the practice should manage a high-risk patient or when the health plan should assist with or take over a case.

Second, practices did not have any formal links with behavioral health and social service resources. There was some effort to integrate and exchange information with behavioral health plans and providers, but challenges remained. One care manager reported that even determining if a patient had shown up for an appointment with a behavioral health provider was difficult, unless the patient had signed a consent form with that provider. Some respondents said that community health teams (CHTs) should have been incorporated as a feature of CCI. The state previously explored the concept, but no decision or progress was reported. In the absence of CHTs, some practices hired or were considering hiring social workers to link patients to behavioral health and/or social service resources. Most practices had not taken this additional step.

Third, lack of communication between primary care practices and hospitals hindered care management and care transitions, particularly in the southeast region, where many participating practices were small and unaffiliated with a major hospital or delivery system. Federally Qualified Health Centers (FQHCs) in the southeast region, which treated many homeless and migrant patients, had particular difficulties in obtaining hospital data; as a workaround, they had tried to train their patients to return to their FQHC within a day of discharge from the hospital. Many practices that obtained discharge data from hospitals reported that the time lag made those data less useful. Practices preferred real-time hospital data, or as close to real-time as possible, so that they could identify discharged patients more quickly and offer more timely care management services to those patients needing it.

Finally, some FQHCs had difficulty strengthening medical home capacity and meeting population needs because of staff turnover at every level of the organization. These organizations continually had to hire and train new staff on the basics of the medical home model, instead of refining and improving practice transformation activities already underway.

**Practice staffing changes.** Some practices reported that their staff worked at the top of their licenses, particularly care managers or those taking on additional and more advanced roles. One practice, for example, said that they followed up with patients who missed their appointment and referred patients repeatedly missing appointments to a social worker. Another practice said that medical assistants did not just take vital signs, but also reviewed and tracked tests.

Several practices, especially in the northeast region, noted that care managers, which were a practice requirement for Phase II of CCI, were more integrated with the rest of the practice, and that physicians were more comfortable working with the care managers in the practice. Before Phase II of CCI, most practices in the northeast region had care managers working in their practice, whereas practices in the southeast typically did not have care managers working in their practice, although some care management support from Medicaid managed care plans was available by telephone if requested. Practices in both regions reported that they would

like to hire or were already in the process of hiring additional staff—mostly care managers, but also social workers, health coaches, medical assistants, and other types of staff. Practices that hired social workers used them to conduct behavioral health screenings and to forge links with behavioral health providers and social service providers. At least one practice hired a health educator to teach patients to self-manage their conditions as much as possible.

Other practices, particularly those that were smaller or not part of a larger system, expressed concern that they would not be able to support the care managers they currently employed or to hire additional staff to help their patients even more, because of decreased PMPM payments and the lack of shared savings payments.

**Health information technology.** In Phase I of CCI, practices were required to use an electronic disease registry for the patient populations targeted (see **Section 10.7** for details on special populations). For practices without one, the state made disease registry software available to practices free of charge and provided a one-time, lump-sum payment for entering patient data into the registry. In general, practices did not have integrated EHR software for identifying high-risk patients and tracking their care management needs. Several practices reported that they communicated electronically with internal providers, but had less success with external providers. EHRs had not been particularly effective for tracking transitions of care and ER visits or developing a registry for high-risk patients unless practices were part of a larger health system. Practices depended on hospitals for patient discharge data, but had limited success in obtaining those data. Payers tried to fill this gap by identifying high-risk patients for practices using predictive modeling systems.

Small practices, particularly those not part of a larger system, had more difficulty with their health IT systems. Smaller practices tended to lack internal IT support, making it more difficult for practice staff to familiarize themselves with new features. Even for practices with IT support, it took time for staff to become comfortable with new features or even to become aware that certain features were available.

### **10.2.2 Technical Assistance**

Many respondents reported that technical assistance—specifically, learning collaboratives and practice coaching—was very good in past years, but in Year Two was redundant and less useful to practices, particularly for some regions or staff. Physicians, in particular, felt that the technical assistance was less useful, while care managers, particularly those in the southeast region who were newer, found the technical assistance more valuable. Practices felt that changes made to the practice coaching after Phase I—such as a shift from being in-person to by telephone, less frequent sessions, and more general topics—made coaching less useful.

Practices received utilization, cost, and quality measure data from CMS through the MAPCP Demonstration Web portal and from certain payers. The Practice Feedback Reports contained individual practice data for three categories: utilization measures, Medicare expenditures, and quality of care measures. Data provided from health plans to practices varied by plan. Data and information received by practices did not change over the past year.

Practices reported wide variation in the usefulness and use of payers' reports, though CMS feedback reports generally were viewed more positively than reports from other payers. Some practices found the reports very helpful for identifying high-risk patients in need of care management services. Other practices felt that the reports were too long to be useful, or that they had less accurate clinical information than the practices themselves. These practices instead preferred to use their EHR system to identify high-risk patients. Several practices also disagreed with payers' criteria for determining which patients were high-risk in the reports; payers based their assessment on cost alone, while practices preferred to take into consideration additional factors (e.g., chronic conditions, number of ER visits). Some practices felt that payer reports would be more useful if the data were made available in a more timely way, rather than annually or even monthly.

### **10.2.3 Payment Support**

Practices generally thought they were not compensated for all of the activities they engaged in as CCI participants, though upfront payments for practices associated with large systems were likely less critical. Many practices considered the payment level and structure flawed. Many practices were concerned that, in future, they would be expected to provide the same level of services to patients and to continue transforming into a medical home, but with less money. Most practices did not receive shared savings payments for their performance in 2012, and they faced a 15 percent reduction in PMPM payments for practice transformation and care management services in 2014 (on top of the 15 percent reduction to practices in 2013). Many practices felt that the reduced PMPM payments were insufficient to support care managers and other investments related to practice transformation, especially since payer attrition had reduced the total dollars available to practices to invest in medical home-related activities. Payer withdrawals disproportionately affected several practices in the southeast region, because of their payer mix, but in the northeast region, the effect on practices was more even. Practices most affected by payer withdrawals faced additional hurdles to maintaining care management services and other medical home infrastructure for their patients, since many medical home features, such as the care manager salaries, were fixed costs.

Some respondents from pediatric practices felt that their care coordination fees were not high enough. Since the structure of the care coordination fee was age-based and not risk-adjusted, pediatric practices received lower per patient payments to manage their patient population than did adult practices. Pediatric practices also felt they did not get enough attention in CCI.

Some practice respondents noted that they were less motivated to work as hard as they had been to transform their practices and to achieve the targeted outcomes. In fact, some felt the payment model rewarded more poorly performing practices, rather than high-performing ones, since shared savings calculations were based on improvement on specified quality measures, regardless of the practices' starting point. It may have been difficult for practices already performing well relative to state or national benchmarks to achieve even modest improvements, while practices performing poorly were more likely to "pick the low hanging fruit" and qualify for the shared savings payment by meeting quality improvement targets.

Payers had some discretion in calculating the shared savings payments, and each used a somewhat different approach. Practices did not fully understand the process and perceived it as lacking transparency. One respondent worried that some differences in shared savings payments resulted from variations in methodology, rather than practice performance on cost and quality metrics. Several practice respondents felt frustrated that they could not verify payers' shared savings calculations themselves. Payers felt that they could not be more transparent about their shared savings calculations without sharing sensitive information about payments to other providers.

Many practices felt frustrated that payers did not provide more frequent information on practices' spending performance. Although CMS reports provided this information, access to and use of those reports by practices was relatively low. Several practices felt that payers should provide feedback on the costs incurred by their patients on a quarterly or monthly basis, so that they could make mid-year corrections, if needed, to achieve shared savings by the end of the year. Several practices wanted payers to make suggestions on ways for practices to achieve cost savings (e.g., identifying less expensive hospitals or less expensive care settings to which practices could steer their patients). One practice respondent felt that, in the absence of information on the cost services in hospitals and other settings, shared savings calculations should be based on utilization rather than cost.

#### **10.2.4 Discussion of Practice Transformation**

Overall, respondents' comments highlighted three areas where practices focused their transformation efforts. First, practices added care managers, social workers, and other staff, or refined their roles to target high-risk patients for care management services and to develop links with behavioral health and social service providers. Second, practices reallocated responsibilities, so that staff worked at the top of their licenses or took on additional and more advanced roles. Third, practices tried to overcome challenges associated with obtaining more timely data from hospitals and other external providers, so that they could use those data to improve care management services.

Pennsylvania's struggle to engage payers and the exit of some health insurance plans from Phase II of CCI were an ongoing concern. These payer withdrawals reduced the size and scope of Phase II and may have shaken providers' confidence in the stability of the initiative. The withdrawal of a plan meant that practices with a large share of patients covered by that payer did not get paid for changes they had made.

The lack of shared savings payments for most practices for their performance in the first year of Phase II, combined with reductions in PMPM payments in the second and third years of Phase II, further weakened practice morale. Most practices remained in CCI for the first 2 years of Phase II, but could have changed that decision if they believed their payments would be too small to cover participation costs in 2014.

## **10.3 Quality of Care, Patient Safety, and Health Outcomes**

### **10.3.1 Implementation of State Initiative and Practice Features Expected to Improve Quality of Care, Patient Safety, and Health Outcomes During Year Two**

At the time of the last site visit, some practices participating in Phase II of CCI engaged in multiple activities focused on improving both quality of care and patient health outcomes and reducing adverse events or medical errors. Since the first site visit, many of these practices continued such activities, and more practices began them. For example, some practices actively used electronic disease registries and their EHR systems to track high-risk patients and those with chronic conditions like diabetes.

Several practices mentioned the benefit of using patient registries for population-based tracking of high-risk patients. Many practices used their registries to identify and track high-risk patients for care coordination and management efforts. Some payers participating in CCI gave providers lists of patients admitted to the hospital or ER. Some practices had relationships or affiliations with local hospitals that made similar information available through their EHR or health IT system. Practices often ran reports on their high-risk patients to identify who had not received needed services and then followed up with those who needed to come into the office for a visit.

For Phase II of CCI, participating practices reported data on 24 performance measures monthly to the PAFP, which managed the collected data on behalf of the state. The tracking of quality measures by the state motivated practices to improve their performance. Practices said the use of quality measure data had a positive effect on their medical home efforts and their overall quality of care. Pediatric practices specifically noted asthma care as an area in which they improved as a result of participating in CCI. Many practices noted that they improved on their quality measures over the past year; this improvement contributed to their frustration over the lack of shared savings payments.

In terms of improving patient safety, CCI funding for practice care managers enabled practices to include medication management and reconciliation after a hospital discharge or ER visit in their care management activities. One respondent said that medication reconciliation for such patients was part of the main role of a care manager. Several practice care managers noted that it was standard procedure to follow up with patients within 48 hours of a hospital visit to conduct medication reconciliation. Several practices reported an increased focus over the past year on following up with patients after a discharge.

CCI officials said that while some practices performed better on the quality measures than others, overall the participating practices in CCI were good performers. While southeast practices did not improve to the same degree as the northeast, CCI officials said the southeast practices improved “dramatically” on multiple measures. While the interviewee did not specify measures, these may have included metrics in diabetes, ischemic heart disease, cancer screening, and asthma, for example. A physician in the southeast said CCI had been successful in terms of “raising quality measures, improving patient lives, moving on to transitions of care, getting better data, getting outlying patients [into the office]...things that would have all been unthinkable four to five years ago.” PAFP noted improvements specifically in preventive measure data.

### 10.3.2 Changes in Quality of Care, Patient Safety, and Health Outcomes

The analyses below report covariate-adjusted differences in two types of quality of care measures for Medicare beneficiaries: process of care measures and preventable hospitalization measures. The results presented in this section, both expected and unexpected, are contextualized and interpreted in conjunction with qualitative findings in **Section 10.3.3**.

**Process of care measures.** *Table 10-5* reports covariate-adjusted differences in several process measures that indicate quality of care across the MAPCP Demonstration and two comparison groups: PCMHs and non-PCMHs. The first four measures address care among the diabetes population, followed by two diabetes composite measures that address whether or not beneficiaries received all four of the recommended actions in diabetes care or none of the quality actions, respectively. The last indicator, on whether a beneficiary received a total lipid panel, follows the care guidance for patients with ischemic vascular disease (IVD).

We examine the probability of receiving the recommended services. These dichotomous (yes/no) indicators are modeled using logistic regression models. Estimates in *Table 10-5* are interpreted as the percentage point difference associated with the MAPCP Demonstration in the likelihood of receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. MAPCP Demonstration beneficiaries are expected to have more positive values in all indicators, except the ‘none’ indicator in diabetes care.

**Table 10-5**  
**Pennsylvania: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 5,372)	0.11	[-0.63, 0.85]	1.96*	[0.63, 3.29]
Year Two (N = 3,640)	-0.24	[-1.25, 0.76]	-0.78	[-2.51, 0.95]
Overall (N = 5,650)	-0.03	[-0.71, 0.65]	0.87	[-0.41, 2.15]
Retinal eye examination				
Year One (N = 5,372)	2.30*	[0.60, 4.00]	0.28	[-2.09, 2.64]
Year Two (N = 3,640)	-2.34*	[-4.49, -0.19]	-1.66	[-4.17, 0.86]
Overall (N = 5,650)	0.45	[-1.15, 2.05]	-0.49	[-2.49, 1.50]
LDL-C screening				
Year One (N = 5,372)	0.79	[-0.67, 2.24]	3.11*	[0.88, 5.33]
Year Two (N = 3,640)	-0.16	[-2.05, 1.74]	-0.39	[-3.10, 2.32]
Overall (N = 5,650)	0.41	[-1.09, 1.92]	1.71	[-0.51, 3.94]

(continued)

**Table 10-5 (continued)**  
**Pennsylvania: Comparison of average change estimates for process of care indicators:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Medical attention for nephropathy				
Year One (N = 5,372)	-2.99	[-6.97, 0.99]	2.28*	[0.27, 4.30]
Year Two (N = 3,640)	-6.59*	[-10.58, -2.61]	-1.81	[-4.27, 0.65]
Overall (N = 5,650)	-4.43*	[-8.32, -0.54]	0.65	[-1.32, 2.63]
Received all 4 diabetes tests				
Year One (N = 5,372)	-0.89	[-4.53, 2.75]	1.14	[-1.60, 3.87]
Year Two (N = 3,640)	-6.96*	[-11.08, -2.84]	-2.82	[-5.90, 0.25]
Overall (N = 5,650)	-3.31	[-6.72, 0.10]	-0.44	[-2.86, 1.98]
Received none of the 4 diabetes tests				
Year One (N = 5,372)	-0.20	[-0.57, 0.16]	-0.64*	[-1.15, -0.13]
Year Two (N = 3,640)	0.09	[-0.41, 0.58]	0.30	[-0.38, 0.97]
Overall (N = 5,650)	-0.09	[-0.43, 0.25]	-0.27	[-0.72, 0.19]
Total lipid panel				
Year One (N = 8,429)	2.34	[-0.60, 5.28]	1.79	[-0.09, 3.66]
Year Two (N = 6,358)	2.14	[-0.88, 5.16]	-0.55	[-3.25, 2.15]
Overall (N = 9,502)	2.26	[-0.59, 5.11]	0.80	[-1.17, 2.77]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique CCI participants eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CCI = Chronic Care Initiative; CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the CCI Demonstration is associated with a decrease in the likelihood that demonstration beneficiaries received **medical attention for nephropathy** by 4.43 percentage points.
- When using beneficiaries assigned to PCMH practices as a comparison group, the Year Two estimate suggests a negative trend towards receiving **all four diabetes tests** among demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.

**Preventable hospitalization measures.** Aside from studying processes of care, largely based on evidence-based guidelines, we also evaluated patient outcomes among demonstration and comparison practices. Some patient medical events, such as those measured with Prevention Quality Indicators (PQIs), could be preventable with adequate access to high-quality primary care services. We define avoidable catastrophic events as inpatient encounters with the following

primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis. The PQI acute composite measure includes preventable hospitalizations for dehydration, urinary tract infection, or bacterial pneumonia. The PQI chronic composite measure includes preventable hospitalizations for diabetes short-term or long-term complications, lower-extremity amputation among patients with diabetes, uncontrolled diabetes, angina without procedure, chronic obstructive pulmonary disease (COPD) or asthma in older adults, asthma in younger adults, hypertension, and congestive heart failure. The PQI overall composite measure includes preventable hospitalizations for all of these conditions. **Table 10-6** below reports covariate-adjusted differences in these patient outcome measures.

We examine differences in the rates of avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters in **Table 10-6**. Estimates in this table are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If the MAPCP Demonstration is associated with improvements in the quality and access to ambulatory care, we expect demonstration beneficiaries to reduce rates (i.e., a significant negative value) of these avoidable hospitalizations.

**Table 10-6**  
**Pennsylvania: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 30,373)	-0.52	[-1.37, 0.32]	-0.28	[-0.99, 0.44]
Year Two (N = 32,782)	-1.04	[-3.46, 1.39]	-0.44	[-1.21, 0.32]
Overall (N = 36,350)	-0.79	[-2.34, 0.77]	-0.36	[-0.99, 0.26]
PQI admissions—overall <sup>2</sup>				
Year One (N = 30,373)	1.19	[-0.27, 2.64]	0.27	[-0.99, 1.52]
Year Two (N = 32,782)	-1.28	[-2.72, 0.17]	-0.48	[-1.86, 0.91]
Overall (N = 36,350)	-0.08	[-0.96, 0.81]	-0.12	[-1.28, 1.05]
PQI admissions—acute <sup>3</sup>				
Year One (N = 30,373)	0.74	[-0.40, 1.89]	-0.03	[-0.64, 0.58]
Year Two (N = 32,782)	0.18	[-0.44, 0.81]	-0.39	[-1.07, 0.29]
Overall (N = 36,350)	0.46	[-0.37, 1.28]	-0.21	[-0.77, 0.34]

(continued)

**Table 10-6 (continued)**  
**Pennsylvania: Comparison of average change estimates for health outcomes:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
PQI admissions—chronic <sup>4</sup>				
Year One (N = 30,373)	0.37	[-0.30, 1.03]	0.23	[-0.64, 1.10]
Year Two (N = 32,782)	-1.48	[-3.12, 0.17]	-0.16	[-1.21, 0.89]
Overall (N = 36,350)	-0.58	[-1.52, 0.36]	0.03	[-0.82, 0.88]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique CCI participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CCI = Chronic Care Initiative; CG = comparison group; COPD = chronic obstructive pulmonary disease; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.

### **10.3.3 Discussion of Quality of Care, Patient Safety, and Health Outcomes**

The metrics for the quantitative analyses discussed above relied on Medicare administrative claims data. For most of the quality indicators, there were no statistically significant findings when comparing CCI practices to the comparison group practices. The lack of movement on the quality measures described above may have reflected CCI's change in focus from Phase I to Phase II; CCI Phase I focused on practice performance on a range of process and quality measures, while CCI Phase II targeted high-risk patients and focused on limiting unnecessary hospital visits for that population.

## **10.4 Access to Care and Coordination of Care**

### **10.4.1 Implementation of State Initiative and Practice Features Expected to Improve Access to Care and Coordination of Care During Year Two**

Beyond requiring practices to obtain NCQA PPC®-PCMH™ recognition, which included a set of requirements for open access, access to care was not a direct or major focus of CCI. Particularly in Phase II, however, some practices reported focusing more on proactively reaching out to patients, particularly to manage patients at risk of ER visits and hospital or nursing home admission. Since the last site visit, practices participating in Phase II of CCI largely were engaged in the same activities meant to increase access to care as in prior years. Many participating practices already had expanded their office hours and offered open access or same-day scheduling for appointments. Several practices said they made these changes previously and continued them. Some practices educated their patients about their hours of operation by posting informational posters in waiting rooms and including the information in telephone messages that patients hear while waiting to speak with a receptionist. One respondent said that practices saw patients, especially those with specific indicators or diseases, more frequently as a result of participating in CCI. A health plan satisfaction survey in the northeast indicated good or very good outcomes on measures related to access to care and coordination of care.

Some practices reported offering 24/7 access to care, but this generally was not a focus during the second year of CCI Phase II. No practices reported offering 24/7 access as a new service since the last site visit. Practices offering 24/7 access did not mention any changes or problems compared to prior years.

To enhance care coordination, CCI required practices to have an on-site care manager, and participating practices received a PMPM payment to fund that position. Since the last site visit, practices focused closely on better coordinating care, particularly for their high-risk patients. One practice said they took “care management to a different level this year.” One new activity they undertook to target patients more effectively for care management was making changes to their health IT system to define a patient’s risk more accurately.

According to several interviewees, practices had adjusted the role of their care managers in the prior year. Across practices, interviewees repeated that finding the right-size patient population for the care manager to handle was a focus of the past year. One practice referred to this effort as a “moving target,” recognizing that serving a larger population was not necessarily the most cost-effective way to deliver care, and that case managers could have a greater impact

with a reduced patient load. This practice reduced its care manager's patient load over the course of the year to address this issue.

Several practices reported using social workers to address the needs of their patients. For example, over the prior year, a pediatric practice worked with a social worker to improve care coordination for behavioral health. The practice cited the social worker's established relationships with behavioral health providers as very helpful and her work coordinating care for their Medicaid population's behavioral health issues as a significant new activity. Another practice reported working with a social worker to help coordinate and connect services for their geriatric population. A third practice employed a social worker who worked in tandem with their care manager on care coordination activities, especially on links to existing community resources.

Following up with patients during and after care transitions from the hospital or ER to other facilities was a main focus for care managers since the last site visit. This activity was sometimes dependent on whether a practice got a list of hospitalized or discharged patients from a health plan or local hospital. Many practices said their care managers tried to contact patients on their high-risk list within 24 to 48 hours of discharge. For practices that did not get such lists, care managers tried to educate their patients to call the practice upon discharge from the hospital to schedule a follow-up appointment. Some practices also cited receiving reminders in their EHR to check on certain patients and make sure they showed up for appointments as a positive impact. Care managers were described as doing a good job of managing transitions of care, especially following up with patients within 24 to 48 hours of a hospital discharge. Interviewees said that care managers also positively affected the tracking of and outreach to patients needing medical management, especially high-risk patients.

#### **10.4.2 Changes in Access to Care and Coordination of Care**

Our evaluation of the MAPCP Demonstration and access to and coordination of care attempts to address whether CCI was associated with changes in utilization of primary care services and specialist services, and with enhanced coordination of care for Medicare beneficiaries. **Table 10-7** below reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across the CCI practices and two comparison groups: PCMHs and non-PCMHs. The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 10.4.3**.

The first four measures address utilization of primary care and specialist services. Demonstration beneficiaries are expected to increase their utilization of primary care services and decrease their utilization of specialist services relative to comparison group beneficiaries after the start of the MAPCP Demonstration. We look at the quarterly rate of primary care ambulatory visits per 1,000 beneficiary quarters, as well as ambulatory care visit rates for medical specialists and surgical specialists. To account for possible changes in the overall visit rate, for example if the MAPCP Demonstration is associated with reductions in both primary care and specialist visit rates, we also analyzed the number of primary care visits per year as a percentage of the total number of ambulatory care visits per year. Having a higher percentage indicates greater use of primary care services relative to specialist services. Demonstration beneficiaries are expected to have higher primary care visit percentages.

We analyzed two outcomes related to coordination of care following hospital discharge: the rate of follow-up visits within 14 days after discharge and the rate of unplanned readmissions within 30 days after discharge, both expressed per 1,000 beneficiaries with a live discharge during the quarter. The CCI is expected to increase the follow-up visit rate and reduce the unplanned readmission rate.

Finally, we assessed continuity of care using an index that is a measure of the concentration of visits among providers in the practice that is the beneficiary's usual source of care or to whom the beneficiary was referred by a provider in that practice. Having a higher concentration of visits in the medical home or by referral from a medical home provider is assumed to strengthen the relationship between patient and provider, enhance communication among a patient's providers, and promote coordinated treatment across providers with a consistent medical management plans. The value of the continuity of care index, which is measured annually, ranges from 0 to 1. Demonstration beneficiaries are expected to have higher values on the continuity of care index.

With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events while a *positive* value corresponds to an *increase* in the rate of events.

Values for primary care visits as a percentage of total ambulatory care visits and the continuity of care index are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. MAPCP Demonstration beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile. These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with the MAPCP Demonstration in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest quintile or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile.

**Table 10-7**  
**Pennsylvania: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 30,373)	72.69*	[11.85, 133.52]	63.16*	[18.91, 107.42]
Year Two (N = 32,782)	50.52*	[2.14, 98.90]	49.37*	[4.86, 93.88]
Overall (N = 36,350)	61.31*	[8.52, 114.11]	56.08*	[13.45, 98.72]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 30,373)	-34.58*	[-58.28, -10.88]	-24.50	[-52.94, 3.95]
Year Two (N = 32,782)	-26.73	[-90.23, 36.76]	-32.59	[-81.65, 16.47]
Overall (N = 36,350)	-30.55	[-71.76, 10.66]	-28.65	[-65.39, 8.09]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 30,373)	-5.82*	[-11.36, -0.27]	-2.36	[-8.18, 3.47]
Year Two (N = 32,782)	-0.98	[-8.68, 6.73]	-9.03*	[-17.62, -0.45]
Overall (N = 36,350)	-3.33	[-9.15, 2.49]	-5.78	[-12.34, 0.77]
Primary care visits as percentage of total visits (higher quintile = larger percentage)				
Year One (N = 29,056)				
1st quintile	-1.56	[-3.69, 0.56]	-2.66*	[-4.05, -1.28]
5th quintile	1.14	[-0.21, 2.49]	1.12*	[0.48, 1.76]
Year Two (N = 21,381)				
1st quintile	-1.91	[-5.72, 1.91]	-3.20*	[-4.89, -1.50]
5th quintile	1.21	[-0.90, 3.31]	1.18*	[0.53, 1.83]
Overall (N = 30,742)				
1st quintile	-1.71	[-4.50, 1.09]	-2.89*	[-4.30, -1.48]
5th quintile	1.17	[-0.47, 2.80]	1.15*	[0.54, 1.75]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 4,630)	29.86	[-3.80, 63.52]	44.32*	[15.75, 72.90]
Year Two (N = 4,527)	58.33	[-2.57, 119.24]	45.22*	[13.26, 77.18]
Overall (N = 7,890)	43.90	[-1.44, 89.24]	44.77*	[19.45, 70.08]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 5,465)	-2.43	[-19.69, 14.83]	-5.19	[-25.70, 15.32]
Year Two (N = 5,379)	-10.58	[-32.67, 11.50]	-12.15	[-29.66, 5.35]
Overall (N = 9,215)	-6.45	[-22.20, 9.29]	-8.63	[-24.53, 7.28]

(continued)

**Table 10-7 (continued)**  
**Pennsylvania: Comparison of average change estimates for access to care and coordination of care:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care index (higher quintile = better continuity of care)				
Year One (N = 31,063)				
1st quintile	-0.93	[-2.03, 0.18]	-1.93*	[-3.28, -0.58]
5th quintile	0.75	[-0.13, 1.63]	0.93*	[0.26, 1.60]
Year Two (N = 23,055)				
1st quintile	-1.87	[-3.98, 0.24]	-3.58*	[-6.14, -1.01]
5th quintile	1.47	[-0.12, 3.07]	1.64*	[0.44, 2.84]
Overall (N = 32,655)				
1st quintile	-1.32	[-2.79, 0.14]	-2.62*	[-4.36, -0.88]
5th quintile	1.05	[-0.07, 2.17]	1.23*	[0.39, 2.07]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique CCI participants eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CCI = Chronic Care Initiative; CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in the rate of **primary care visits** among demonstration beneficiaries by 61.31 per 1,000 beneficiary quarters.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in

the rate of **primary care visits** among demonstration beneficiaries by 56.08 per 1,000 beneficiary quarters.

- When using beneficiaries assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend towards a decreased rate of **surgical specialist visits** among demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in primary care visits as a share of total visits. Specifically, the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's **primary care visits as percent of total visits** was in the lower quintile and increase in the likelihood that it was in the upper quintile. The upper quintile represents beneficiaries who had the highest percentage of visits in the primary care setting.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in the rate of **follow-up visit within 14 days after discharge** among demonstration beneficiaries by 44.77 per 1,000 beneficiaries with a live discharge.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, the overall estimate indicates that the demonstration is associated with an increase in continuity of care, as measured by concentration of visits. Specifically, the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers.

#### 10.4.3 Discussion of Access to Care and Coordination of Care

Overall, there was evidence that CCI practices experienced the expected shift in the rate of primary care visits relative to PCMHs and non-PCMHs in the comparison group. The percentage of total visits that were primary care visits also increased for CCI beneficiaries relative to non-PCMH comparison group beneficiaries. There was also evidence that CCI practices improved continuity of care relative to non-PCMH practices. These changes could be associated with the CCI Phase II requirement that practices have an on-site care manager, and practices' efforts since Phase II (and for the northeast region, Phase I) to focus more closely on improving care coordination, particularly for their high-risk patients.

There was evidence of improved care coordination following hospital discharge relative to the non-PCMH comparison group. This is consistent with reports that following up with patients during and after care transitions from the hospital or ER to other facilities was a main focus for care managers in the second year of the demonstration. This activity was sometimes

dependent on whether a practice got a list of hospitalized or discharged patients from a health plan or local hospital. Many practices said their care managers tried to contact patients on their high-risk list within 24 to 48 hours of discharge.

## **10.5 Beneficiary Experience with Care**

### **10.5.1 Implementation of State Initiative and Practice Features Expected to Improve Beneficiary Experience with Care During Year Two**

Interviewees named several PCMH care processes and activities as most visible to patients over the past year, including the patient portal, care managers, and health educators.

Multiple practices named the patient portal as a feature of the PCMH that drew a positive response from patients. Practices said their patients liked to see all of their information in one place, including lab results, imaging, medications, and allergies.

Interviewees also mentioned care managers and health educators as visible manifestations of a practice's participation in CCI. They said that patients overall liked these new services, particularly if they could call a direct number to reach them. Following up with patients after discharge from the hospital or ER was cited as a huge benefit to patients, especially for medication reconciliation.

Practices did not describe significant changes in their attempts to engage patients in shared decision making in the second year of the demonstration. Previously, practices reported using patient agendas, lists of issues patients brought to discuss during an office visit.

In terms of patient education and increasing knowledge for better self-management of conditions, the patient portal, health educators (specifically related to diabetes), and the PCMH model overall were cited as facilitating activities. Some practices said the patient portal had potential to make a dramatic change in how patients worked with their physician in managing their health care, noting that patients were excited to "own" their record. One respondent cited planned, proactive care and patient education as efforts that helped patients overcome barriers to managing their asthma, in particular.

Practices described different attempts at education specifically for diabetic patients, both through group visits and one-on-one meetings, with differing results. One practice tried using group visits for diabetic patients, but had difficulty getting significant participation. That practice moved to one-on-one visits with a diabetic health educator and found those more effective. Another practice had significant success with group visits for their diabetic patients, where they provided educational classes and guest speakers. They also used the group visits to address gaps in care and to provide a complete physical. That practice saw great quality improvement within their diabetic population from using the group visit approach.

To assess beneficiary experience with care in Phase I of the initiative, CCI fielded a pre- and post-initiative patient satisfaction survey. The survey was fielded in the northeast in 2010 and 2013 and in the southeast in 2008 and 2011. A state official who described some of the findings noted mixed results. The survey found that, in the northeast region, patients in the control group were less satisfied with their care compared to patients in the participating

practices. In the southeast region, patients in the control group and the participating practices reported similar patient satisfaction scores and trends over time.<sup>2</sup>

During the 2013 interviews, some patients expressed satisfaction with the comprehensive medical home model, saying that they noticed—and liked—the increase in coordinated, comprehensive care. In some practices, the medical home model was not apparent to patients. Some respondents thought that many patients appreciated the PCMH model and would never want to go back to the “old way.” These patients valued the change in their relationship with their physician. Some Medicaid patients felt they were treated with more respect in practices that had implemented the PCMH model successfully.

### **10.5.2 Changes in Beneficiary Experience with Care**

Quantitative data assessing the association between CCI and changes in beneficiary experience with care were not yet available. In the final report, we plan to report our findings from the PCMH-CAHPS survey administered to Medicare beneficiaries.

## **10.6 Effectiveness (Utilization & Expenditures)**

### **10.6.1 Implementation of State Initiative and Practice Features Expected to Affect Patterns of Utilization and Expenditures During Year Two**

According to its MAPCP Demonstration application, Pennsylvania expected to see a 10 percent reduction in inpatient costs and a 15 percent reduction in ER visits. State officials also expected that Phase II of CCI would result in a 20 percent increase in evaluation and management (E&M) visits, and a 54 to 59 percent increase in the use of laboratory tests. State officials expected that the following features of Phase II of CCI would contribute to reductions in inpatient and ER utilization:

- Development of self-management support plans for patients with chronic conditions
- Enhanced access to primary care
- Better management of transitions in care
- More aggressive tracking of and outreach to patients in need of medical management
- Care management for high-risk patients

During the 2013 site visit, interviewees repeatedly mentioned the care management component and care coordination focus as having a perceived positive effect on reducing hospital admissions and unnecessary ER visits.

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<sup>2</sup> Morpace. Chronic Care Initiative: Consumer Post-Intervention Survey: South East Pennsylvania (SEPA). 2012; Morpace. Chronic Care Initiative: Consumer Post-Intervention Survey: North East Pennsylvania (NEPA). 2013.

Practices often associated features of Phase II of CCI with helping to focus their efforts on reducing utilization and expenditures, specifically for ER visits, hospitalizations, and readmissions. One practice said the CCI's focus on readmissions had "changed the whole frame of reference of hospitalization" for practices, and that when patients were readmitted unnecessarily, it "feels like a failure of our system." According to one respondent, pediatric practices tried to "kick it up a notch" on preventing asthma-related hospitalizations in the demonstration's second year. This respondent specifically mentioned one practice's system of immediate EHR notification of such admissions and an intensified commitment to following up on ER visits. This practice was part of a larger hospital system. The respondent said independent practices had a much harder time getting the needed information from local hospitals with which they were not directly affiliated.

Utilization patterns across practices participating in Phase II of CCI varied in the demonstration's second year, with some payers reporting an increase in primary care visits at certain practices, and one payer reporting a decrease in such visits. Some payers reported a downward trend in ER visits and hospital readmissions, but said the decreases were not significant. Payers overall said they did not see significant drops in readmissions or hospital visits that, in their opinion, were associated with Phase II of CCI. This view was at odds with what many respondents from participating CCI practices believed they had achieved. Many practices felt that they had focused on reducing ER visits and unnecessary hospitalizations more than in the past, and that this focus was associated with utilization reductions. They said that they lacked data to support this view, however, because of delays by health plans in providing such utilization information to them. Although CMS reports did provide this information, access to and use of those reports by practices was relatively low (see *Section 10.2*).

### 10.6.2 Changes in Utilization and Expenditures

*Tables 10-8 and 10-9* report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between CCI and the two comparison groups: PCMHs and non-PCMHs. The first table contains measures of total expenditures, as well as specific categories of expenditures that are expected to be affected by the implementation of the CCI. Estimates in this table are interpreted as the difference in the rate of growth in per beneficiary per month (PBPM) expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. It is expected that CCI will reduce unnecessary use of inpatient acute-care and related post-acute-care, as well as ER visits. To assess whether CCI is associated with the intended utilization changes in these care categories, we observe acute-care, post-acute-care, ER, specialty physician, and imaging expenditures. We also analyze the changes in all-cause admissions and ER visits not leading to hospitalization measured as rates per 1,000 beneficiary quarters. *Table 10-9* contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits not leading to hospitalization per 1,000 beneficiary quarters associated with the MAPCP Demonstration in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.

CCI is also expected to produce higher utilization of certain types of services. In particular, we expect that the demonstration will increase the utilization of primary care, home-

based care, and outpatient services (includes care received at hospital outpatient departments, FQHCs, and rural health centers [RHCs], as well as laboratory tests. These services are captured in our measures of primary care physician expenditures, home health expenditures, outpatient, and laboratory expenditures. Positive regression coefficients indicate that CCI is associated with the expected increase in the use of these services.

As described above, CCI is expected to decrease the use of some services, while increasing the use of others. Overall, however, the MAPCP Demonstration is intended to decrease total Medicare expenditures. To evaluate this, we analyzed the average overall Medicare PBPM expenditures and look for a significantly negative coefficient estimate.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in **Section 10.6.4**.

**Table 10-8**  
**Pennsylvania: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 30,373)	26.22	[-24.83, 77.27]	-8.83	[-49.51, 31.84]
Year Two (N = 32,782)	-39.51*	[-71.34, -7.68]	-47.48*	[-85.03, -9.93]
Overall (N = 36,350)	-7.50	[-39.16, 24.15]	-28.66	[-64.67, 7.34]
Acute-care				
Year One (N = 30,373)	8.48	[-11.42, 28.38]	-5.96	[-26.43, 14.52]
Year Two (N = 32,782)	-21.85*	[-39.02, -4.67]	-22.81*	[-43.20, -2.41]
Overall (N = 36,350)	-7.08	[-21.36, 7.21]	-14.60	[-32.58, 3.37]
Post-acute-care				
Year One (N = 30,373)	15.75*	[1.79, 29.71]	5.96	[-8.36, 20.28]
Year Two (N = 32,782)	-4.76	[-17.84, 8.33]	-9.15	[-24.25, 5.96]
Overall (N = 36,350)	5.23	[-3.20, 13.65]	-1.79	[-15.17, 11.59]
ER				
Year One (N = 30,373)	-1.22	[-5.01, 2.56]	-0.98	[-2.18, 0.22]
Year Two (N = 32,782)	-2.25*	[-3.40, -1.10]	-0.92	[-2.07, 0.22]
Overall (N = 36,350)	-1.75	[-4.03, 0.54]	-0.95	[-1.94, 0.04]
Outpatient				
Year One (N = 30,373)	-4.75	[-11.69, 2.19]	2.94	[-3.69, 9.57]
Year Two (N = 32,782)	-9.49*	[-17.34, -1.63]	0.71	[-6.75, 8.16]
Overall (N = 36,350)	-7.18*	[-13.95, -0.41]	1.80	[-4.42, 8.01]
Specialty physician				
Year One (N = 30,373)	2.65	[-6.25, 11.54]	-5.19	[-10.76, 0.38]
Year Two (N = 32,782)	3.60	[-6.07, 13.26]	-10.10*	[-15.49, -4.70]
Overall (N = 36,350)	3.13	[-5.93, 12.20]	-7.71*	[-12.59, -2.82]

(continued)

**Table 10-8 (continued)**  
**Pennsylvania: Comparison of average change estimates for expenditures:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care physician				
Year One (N = 30,373)	2.08*	[0.56, 3.60]	-0.48	[-2.66, 1.70]
Year Two (N = 32,782)	-2.29	[-5.16, 0.57]	-2.11	[-4.38, 0.15]
Overall (N = 36,350)	-0.16	[-2.20, 1.87]	-1.32	[-3.44, 0.80]
Home health				
Year One (N = 30,373)	2.57	[-1.06, 6.21]	-0.29	[-4.25, 3.68]
Year Two (N = 32,782)	0.08	[-2.80, 2.96]	-2.50	[-6.65, 1.65]
Overall (N = 36,350)	1.29	[-1.73, 4.32]	-1.42	[-5.22, 2.38]
Other non-facility				
Year One (N = 30,373)	-0.59	[-5.12, 3.94]	-3.55	[-7.58, 0.48]
Year Two (N = 32,782)	-2.00	[-5.93, 1.92]	-3.13	[-6.32, 0.06]
Overall (N = 36,350)	-1.31	[-5.37, 2.74]	-3.34*	[-6.65, -0.02]
Laboratory				
Year One (N = 30,373)	-1.50*	[-2.84, -0.16]	-2.39*	[-3.71, -1.08]
Year Two (N = 32,782)	-2.56*	[-3.70, -1.41]	-2.15*	[-3.46, -0.85]
Overall (N = 36,350)	-2.04*	[-3.18, -0.91]	-2.27*	[-3.48, -1.06]
Imaging				
Year One (N = 30,373)	-1.04	[-3.29, 1.21]	-0.64	[-2.21, 0.92]
Year Two (N = 32,782)	-1.61	[-4.12, 0.89]	-0.88	[-2.72, 0.96]
Overall (N = 36,350)	-1.33	[-3.69, 1.02]	-0.77	[-2.42, 0.89]
Other facility				
Year One (N = 30,373)	-0.17	[-0.65, 0.30]	-0.29	[-0.65, 0.07]
Year Two (N = 32,782)	-0.06	[-0.34, 0.22]	-0.51	[-1.04, 0.02]
Overall (N = 36,350)	-0.11	[-0.44, 0.21]	-0.40*	[-0.78, -0.03]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique CCI participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CCI = Chronic Care Initiative; CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **total Medicare expenditures**, though the *overall* estimate is not statistically significant.

- Relative to beneficiaries in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **total Medicare expenditures**, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **acute-care expenditures**, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **acute-care expenditures**, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **expenditures for ER visits not leading to a hospitalization**, though the *overall* estimate is not statistically significant.
- The *overall* growth in **outpatient (including FQHCs) expenditures** is slower among beneficiaries in demonstration practices relative to beneficiaries in PCMH practices.
- The *overall* growth in **expenditures for specialty physicians** is slower among beneficiaries in demonstration practices relative to beneficiaries in non-PCMH practices.
- The *overall* growth in **laboratory expenditures** is slower among beneficiaries in demonstration practices relative to beneficiaries in both PCMH and non-PCMH practices.
- The *overall* growth in **other facility expenditures** is slower among beneficiaries in demonstration practices relative to beneficiaries in non-PCMH practices.

**Table 10-9**  
**Pennsylvania: Comparison of average change estimates for utilization:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 30,373)	1.60	[-1.43, 4.62]	3.67	[-0.02, 7.36]
Year Two (N = 32,782)	-5.42	[-14.28, 3.43]	0.03	[-3.91, 3.97]
Overall (N = 36,350)	-2.00	[-7.59, 3.58]	1.80	[-1.61, 5.21]
ER visits not leading to hospitalization				
Year One (N = 30,373)	-3.61	[-7.71, 0.48]	-1.79	[-6.62, 3.04]
Year Two (N = 32,782)	-3.75	[-8.33, 0.84]	-1.65	[-6.75, 3.45]
Overall (N = 36,350)	-3.68	[-7.70, 0.34]	-1.72	[-6.23, 2.80]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique CCI participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CCI = Chronic Care Initiative; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **all-cause admissions** or **ER visits not leading to a hospitalization** among demonstration beneficiaries.
- When using beneficiaries assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **all-cause admissions** or **ER visits not leading to a hospitalization** among demonstration beneficiaries.

### 10.6.3 Medicare Budget Neutrality in Year Two of the Chronic Care Initiative

#### Gross Savings Regression Methodology

Gross savings are defined as the reduction in Medicare expenditures associated with the intervention, absent any fees paid on behalf of Medicare. Estimates of gross savings for Pennsylvania through Year Two of the demonstration are based on the sum of eight quarter-specific MAPCP Demonstration cost regression coefficients comparing beneficiaries attributed to MAPCP Demonstration practices to beneficiaries attributed to PCMH comparison practices.

Negative cost estimates denote savings, as the growth in MAPCP Demonstration costs was smaller than in the comparison group. Positive cost estimates denote losses, as the growth in MAPCP Demonstration costs exceeded that in the comparison group. Gross savings estimates are derived from a Medicare expenditure equation estimated using weighted least squares, with the beneficiary-quarter as the unit of analysis.

### **MAPCP Demonstration Fees**

In the MAPCP Demonstration, CMS paid monthly medical home fees to CCI practices for Medicare-assigned demonstration beneficiaries. Fees represented those that were actually paid, and there was no imputation for practices choosing not to bill for care management under the demonstration.

Total monthly fees paid by Medicare were aggregated to the quarter level from claims submitted on behalf of the practices and other participating organizations. Budget neutrality, or net savings, was determined on a yearly (or multiple-year) basis by subtracting all paid fees during the year from estimated gross savings. Total fees used in this section to calculate budget neutrality were slightly lower than the actual fees paid. This is because the savings regression model excluded beneficiaries eligible for the intervention for fewer than 3 months. To be consistent with the expenditure regression models, total fees also were calculated excluding beneficiaries with fewer than 3 months of demonstration eligibility.

### **Statistical Tests of Budget Neutrality**

This regression methodology allows for statistical tests of confidence that CMS and the states can place in any estimated savings. Three tests are conducted in the analysis.

1. The first is a test of the individual demonstration quarter coefficients using a two-sided 90 percent confidence interval. This test answers the question: *Was the MAPCP Demonstration intervention associated with a lower level of costs in one or more demonstration quarters during the first 2 years?*
2. The second tests a linear sum of the eight quarterly estimates of gross savings and answers the question: *Were MAPCP Demonstration gross savings, in total, statistically greater than zero during the first 2 years?* This test produces a confidence interval for gross savings by weighting the eight estimates of lower demonstration expenditures (i.e., gross savings) by the number of fee-bearing beneficiaries each quarter. For the intervention to be budget neutral in a statistical (as compared with an absolute) sense, the lower confidence threshold for gross savings must be positive, implying systematically lower demonstration expenditures relative to the PCMH comparison group and controlling for beneficiary and practice characteristics.
3. The third test requires that total gross savings exceeds total fees and answers the question: *Did gross savings more than cover the total fees that Medicare paid out?*

## **Return on Investment (RoI) of Fees and Ratio of Gross Savings to Expenditures**

In addition to statistical testing of the total gross savings estimate, we calculate two additional measures to place the budget neutrality of the MAPCP Demonstration into perspective. The first measure is the return on investment (RoI) of fees, the ratio of total gross savings to total fees paid by the MAPCP Demonstration. RoI answers the question: How much did CMS save in Medicare expenditures per dollar paid out in fees? An RoI equal to or greater than 1.0 implies budget neutrality. The second measure is the ratio of total gross savings to total Medicare expenditures expected among demonstration beneficiaries in the absence of the demonstration. This unobservable outcome is estimated by taking average Medicare expenditures observed in the comparison group and multiplying them by the number of demonstration beneficiaries. Viewing the total gross savings in context of this number answers the question: What was Medicare's savings as a percentage of all expenditures? The validity of the interpretation of both of these ratios, however, relies on the statistical significance of the estimate of total gross savings.

*Tables 10-10a–c* report the estimated gross and net savings for Pennsylvania during the first 2 years of the MAPCP Demonstration. Results are presented separately by the first eight demonstration quarters and then aggregated to a 2-year total.

**Table 10-10a**  
**Pennsylvania: Estimates of gross savings, fees paid, and net savings, Year One**

	MAPCP Demonstration quarter (Year One)				Year One
	2012: Q1 (Jan–Mar)	2012: Q2 (Apr–Jun)	2012: Q3 (Jul–Sept)	2012: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	\$28.26	\$121.24	\$106.08	\$57.67	\$78.66
Eligible beneficiary quarters (B)	25,547	26,339	26,963	27,303	106,152
Total gross savings (C = -A*B)	-\$722,054	-\$3,193,236	-\$2,860,286	-\$1,574,460	-\$8,350,036
Total MAPCP Demonstration fees (D)	\$461,387	\$557,683	\$515,972	\$542,430	\$2,077,472
Net savings (E = C-D)	-\$1,183,441	-\$3,750,919	-\$3,376,258	-\$2,116,890	-\$10,427,508
Average expenditures (PCMH CG) (F)	\$2,308	\$2,530	\$2,507	\$2,650	\$2,502
Total expenditures (PCMH CG) (G = F*B)	\$58,962,476	\$66,637,670	\$67,596,241	\$72,352,950	\$265,549,337
Average expenditures (MAPCP Demonstration) (H)	\$2,517	\$2,788	\$2,707	\$2,790	\$2,703
Total expenditures (MAPCP Demonstration) (I = H*B)	\$64,301,799	\$73,433,132	\$72,988,841	\$76,175,370	\$286,899,142

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Estimated average per beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)

(B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in CG. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)

(I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP Demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 10-10b**  
**Pennsylvania: Estimates of gross savings, fees paid, and net savings, Year Two**

	MAPCP Demonstration quarter (Year Two)				Year Two
	2013: Q1 (Jan–Mar)	2013: Q2 (Apr–Jun)	2013: Q3 (Jul–Sept)	2013: Q4 (Oct–Dec)	
Difference in quarterly expenditures per beneficiary (A)	-\$78.46	-\$69.21	-\$171.25*	-\$152.64	-\$118.53*
Eligible beneficiary quarters (B)	27,430	27,618	28,136	28,661	111,846
Total gross savings (C = -A*B)	\$2,152,258	\$1,911,356	\$4,818,354	\$4,374,833	\$13,256,801
Total MAPCP Demonstration fees (D)	\$459,673	\$448,971	\$458,494	\$471,560	\$1,838,698
Net savings (E = C-D)	\$1,692,585	\$1,462,384	\$4,359,860	\$3,903,273	\$11,418,102
Average expenditures (PCMH CG) (F)	\$2,717	\$2,708	\$2,518	\$2,732	\$2,669
Total expenditures (PCMH CG) (G = F*B)	\$74,527,310	\$74,789,544	\$70,846,448	\$78,301,852	\$298,465,154
Average expenditures (MAPCP Demonstration) (H)	\$2,705	\$2,719	\$2,574	\$2,684	\$2,670
Total expenditures (MAPCP Demonstration) (I = H*B)	\$74,198,150	\$75,093,342	\$72,422,064	\$76,926,124	\$298,639,680

**NOTES:**

- (A) Difference in quarterly expenditures per beneficiary: Estimated average per-beneficiary change in quarterly Medicare expenditures associated with the demonstration. Estimate is taken from the regression model of total expenditures. (Note: Annual figures represent a weighted average of the preceding individual quarterly estimates.)
- (B) Eligible beneficiary quarters: Number of eligible demonstration beneficiaries in a given quarter (weighted by the eligibility fraction and excluding beneficiaries with fewer than 3 months of eligibility). (Note: Annual figures represent a sum of the preceding individual quarterly totals.)
- (C) Total gross savings (-A\*B): The difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)
- (D) Total MAPCP Demonstration fees: Sum of MAPCP Demonstration fees excluding beneficiaries with fewer than 3 months of eligibility. (Note: Annual figures represent a sum of the preceding individual quarterly totals.)
- (E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.
- (F) Average expenditures (comp): Simple weighted average of quarterly Medicare expenditures per beneficiary in comparison group. Weights represent the product of quarterly eligibility fractions and entropy balance weights. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)
- (G) Total expenditures (comp) (F\*B): Weighted average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.
- (H) Average expenditures (MAPCP Demonstration): Simple weighted average of quarterly Medicare expenditures per beneficiary in MAPCP Demonstration group. Weights represent quarterly eligibility fractions. (Note: Annual figures represent a weighted average of the preceding individual quarterly averages.)
- (I) Total expenditures (MAPCP Demonstration) (H\*B): Weighted average expenditures (MAPCP demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

**Table 10-10c**  
**Pennsylvania: Estimates of gross savings, fees paid, and net savings, all years**

	Year One and Year Two	90% confidence interval	
		Lower	Upper
Difference in quarterly expenditures per beneficiary (A)	-\$22.51	-\$117.47	\$72.46
Eligible beneficiary quarters (B)	217,998	—	—
Eligible beneficiaries overall	36,350	—	—
Total gross savings (C = -A*B)	\$4,906,765	-\$15,795,709	\$25,609,236
Total MAPCP Demonstration fees (D)	3,916,170	—	—
Net savings (E = C-D)	\$990,594	-\$19,711,879	\$21,693,066
Average expenditures (PCMH CG) (F)	\$2,587	—	—
Total expenditures (PCMH CG) (G = F*B)	\$564,014,491	—	—
Average expenditures (MAPCP Demonstration) (H)	\$2,686	—	—
Total expenditures (MAPCP Demonstration) (I = H*B)	\$585,538,822	—	—
Return on fees (J = C/D)	1.25	—	—
Gross savings per comparison expenditures (K = C/G)	0.009	—	—

**NOTES:**

(A) Difference in quarterly expenditures per beneficiary: Weighted average of preceding individual quarterly estimates for quarters from demonstration to date.

(B) Eligible beneficiary quarters: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(C) Total gross savings (-A\*B): Weighted average of the quarterly difference in expenditures per beneficiary associated with the demonstration multiplied by the number of eligible beneficiary quarters to date. To calculate savings, the sign of A is reversed, since a negative change in expenditures associated with the demonstration equates to positive savings for the program as a whole (and vice versa). (Note: C may not exactly equal the product of A and B, as A and B represent rounded figures.)

(D) Total MAPCP Demonstration fees: Sum of preceding individual quarterly totals for quarters from demonstration to date.

(E) Net savings (C-D): Total gross savings minus total MAPCP Demonstration fees paid.

(F) Average expenditures (comp): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(G) Total expenditures (comp) (F\*B): Average expenditures (comp) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters.

(H) Average expenditures (MAPCP Demonstration): Weighted average of preceding individual quarterly averages for quarters from demonstration to date.

(I) Total expenditures (MAPCP Demonstration) (H\*B): Average expenditures (MAPCP demonstration) multiplied by the number of MAPCP Demonstration-eligible beneficiary quarters

(J) Return on fees (J = C/D): Total gross savings divided by total MAPCP Demonstration fees.

(K) Gross savings per comp cost (K = C/G): Total gross savings divided by total expenditures (comp).

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; — = not applicable; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

SOURCE: Medicare claims 2012:Q1–2013:Q4.

- Estimated differences in CCI costs per beneficiary, relative to the comparison group, range from a positive \$121.24 (2012: Quarter 2) to a negative \$171.25 (2013: Quarter 3) (*Tables 10-10a–b*). While estimates in some quarters were negative, they were statistically insignificant in all but the seventh quarter (2013: Quarter 3).
- Estimated total gross savings to Medicare is a positive \$ 4,906,765 [*Table 10-10c: C*]. The implied savings, however, were not statistically significant. The confidence interval (2-sided; 90 percent level) around the estimate of gross savings range between \$16 million in losses to \$26 million in savings. Estimated net savings are \$990,594, but similarly are not statistically significant.
- The \$5 million savings estimate represents 0.9 percent of the estimated \$564 million in comparison group costs weighted by CCI eligible beneficiaries [*Table 10-10c: K*]. The width of the confidence interval for total gross savings, however, indicates that savings to date cannot be considered statistically different from zero.
- Total fees paid out based on CCI eligible quarters were \$3,916,170 [*Table 10-10c: D*], or \$5.99 per eligible month.<sup>3</sup> The fees averaged about 0.6 percent of total Medicare expenditures for health services by CCI-eligible beneficiaries during the demonstration’s first 2 years [*Table 10-10c: I*].
- This translates into a Medicare RoI of fees of 1.25 (-\$4,906,765/\$3,916,170) [*Table 10-10c: J*], though the confidence interval around the total gross savings estimate does not indicate statistical significance.

#### 10.6.4 Discussion of Effectiveness

State officials expected that the development of self-management support plans, enhanced primary care access, better management of care transitions, more aggressive patient tracking and outreach, and care management for high-risk patients would contribute to reductions in inpatient and ER utilization and costs. During the 2013 site visit, interviewees repeatedly mentioned CCI’s care management component and care coordination focus as having a perceived positive effect on reducing hospital admissions and unnecessary ER visits.

There was some evidence that CCI practices were associated with slower growth of expenditures in some areas. While expenditures in the first year of the demonstration generally did not show much improvement, gains were made in Year Two. In the second year of the demonstration, the growth in **total Medicare expenditures** was slower among beneficiaries assigned to CCI practices relative to beneficiaries assigned to PCMH and non-PCMH practices. In the same year, growth in **acute-care expenditures** was slower among beneficiaries assigned to CCI practices relative to beneficiaries assigned to comparison PCMH and non-PCMH

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<sup>3</sup> Fees per eligible month equaled the total fees divided by MAPCP Demonstration eligible months. Eligible months equaled eligible quarters multiplied by three.

practices, and growth in **ER expenditure** and **outpatient expenditures** was slower relative to other PCMH practices.

While the \$4.9 million in estimated MAPCP Demonstration gross savings in Pennsylvania was not statistically significant, the savings should be considered in the context of the very low percentage investment made by CMS in the state (about 0.6% of Medicare expenditures on services to all Part A and Part B providers). It is possible that savings would have been disproportionately larger with a larger monthly investment in participating medical homes.

## **10.7 Special Populations**

### **10.7.1 Targeting of Special Populations and Tailored Interventions During Year Two**

In Phase I of CCI, Pennsylvania payers and practices focused on patients with chronic conditions, particularly patients with diabetes and/or asthma.

In Phase II of CCI, Pennsylvania and the participating practices still focused on patients with chronic conditions, but payers and practices added new areas of focus, including

- Preventive care (e.g., smoking status and interventions, obesity and body mass index, cancer screening and prevention, immunizations);
- Additional chronic conditions (e.g., congestive heart failure); and
- High-risk patients.

The algorithms used by payers to define high-risk patients varied, and practices used the data on high-risk patients provided by each plan, in addition to their own EHR and disease registry data, to target patients for care management in different ways. As mentioned earlier, some practices found the reports produced by payers to be very helpful for identifying their high-risk patients in need of care management services. Others said that the reports were too long to be useful or that they had less accurate clinical information than the practices themselves. These practices instead preferred to use their EHR system to identify high-risk patients. Several practices also disagreed with payers' criteria for determining which patients were high risk in the reports, which were based on cost alone. These practices preferred to take into consideration additional factors (e.g., chronic conditions, number of ER visits). Care management activities in Phase II of CCI focused on this population of high-risk patients. As detailed in earlier sections, practices sustained their care coordination efforts in the demonstration's second year, relying on their care managers and health educators to work with their high-risk patients with chronic conditions.

There were no special interventions for Medicare, Medicaid, or dually eligible beneficiaries in Phase II of CCI. The rationale for this, as articulated by some respondents, was that practices were improving their systems of care to produce better outcomes, and all patients were treated similarly. What mattered most was not the patient's insurance status, but their

clinical characteristics and needs, particularly whether they needed preventive care, had chronic conditions, or were at high risk.

Phase II of CCI may be associated with some positive changes for beneficiaries with chronic conditions and other beneficiaries at high risk for avoidable ER admissions, hospitalizations, readmissions, and high total costs. Respondents agreed that CCI support for enhanced care coordination and care management helped practices improve on many of the quality measures they reported. Practices reported patient satisfaction with the added services provided by the care managers. Reports of improvements in hospitalization, readmission, and total cost savings remained anecdotal, however, although practices felt they had achieved reductions.

### 10.7.2 Changes Experienced by Special Populations

In all states, we provide quantitative analysis of association between the MAPCP Demonstration and changes experienced by select special populations of Medicare beneficiaries. These special populations include beneficiaries with specific conditions that could lead to higher utilization of health care (beneficiaries with multiple chronic conditions, behavioral health conditions, or disabilities) or those who may experience disparities in access to and quality of health care (beneficiaries who are dually eligible for Medicare and Medicaid, live in rural areas, or belong to racial/ethnic minorities). Based on potential regional differences in the implementation of CCI, we also examine the changes associated with the CCI separately in the northeast and southeast regions. **Table 10-11** reports covariate-adjusted differences in total Medicare spending PBPM across the MAPCP Demonstration and two comparison groups—PCMHs and non-PCMHs—for all eight special populations. Estimates in **Table 10-11** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

**Tables 10-12 through 10-16** examine the changes associated with CCI for beneficiaries with multiple chronic conditions. Patients with chronic conditions were a focus of CCI, and care management might be expected to have a greater impact on the outcomes for this population than for the Medicare population in general. For this reason, we report all quality of care, access to care, expenditures, and utilization outcomes for this special population.

The multiple chronic condition group is defined as beneficiaries with three or more chronic conditions present in two consecutive years of Medicare claims. To identify chronic conditions, we used the Chronic Condition Indicator algorithm, developed by the Agency for Healthcare Research and Quality (AHRQ) as part of the Healthcare Cost and Utilization Project (discussed in more detail in Appendix D). The algorithm classifies International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes as either chronic or non-chronic and is updated each year. A chronic condition is defined as one lasting 12 months or longer and meeting one or both of the following conditions: (a) limiting a person's ability to care for themselves, live independently, or interact with others; (b) requiring ongoing intervention with medical products, services, and/or special equipment. In addition, beneficiaries also had to be in the CMS-HCC high-risk category (top quartile of predicted expenditures). Over the first 2 years of the demonstration, 26 percent of beneficiaries fit this profile in Pennsylvania.

Medicare beneficiaries with behavioral health conditions are another population with greater health needs who could benefit more from care management, relative to the Medicare population in general. This population also has expenditures and utilization directly identifiable as due to behavioral health conditions. In all states, we report the changes associated with the MAPCP Demonstration on a selection of overall and behavioral health-specific expenditure and utilization outcomes; the results are in *Table 10-17* and *Table 10-18*.

For the remaining special populations listed above, we provide additional analyses of the changes associated with CCI on selected expenditure and utilization outcomes only if CCI is associated with a statistically significant change in total Medicare expenditures, as reported in *Table 10-11*. For these special populations, we report the outcomes requested by CMS, which are acute-care expenditures, outpatient ER expenditures, primary care physician expenditures, specialty care physician expenditures, acute hospital visits, outpatient ER visits, and readmissions, to get a better understanding of the significant reductions in total Medicare expenditures. These outcomes for rural beneficiaries are reported in *Table 10-19*.

The results presented in this section are contextualized and interpreted in conjunction with qualitative findings in *Section 10.7.3*.

**Table 10-11**  
**Pennsylvania: Comparison of average change estimates for PBPM Medicare expenditures**  
**among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Multiple chronic conditions only				
Year One (N = 8,039)	107.94	[-40.91, 256.79]	-29.71	[-133.42, 74.00]
Year Two (N = 7,938)	-166.89*	[-253.00, -80.77]	-114.35*	[-202.46, -26.23]
Overall (N = 9,312)	-25.14	[-91.74, 41.46]	-70.69	[-151.33, 9.94]
Behavioral health conditions only				
Year One (N = 4,483)	-16.28	[-84.11, 51.55]	-95.90	[-195.01, 3.22]
Year Two (N = 4,746)	-120.83*	[-234.49, -7.17]	-112.39	[-262.90, 38.12]
Overall (N = 5,514)	-68.98*	[-137.12, -0.84]	-104.21	[-215.29, 6.86]
Disabled beneficiaries only				
Year One (N = 8,448)	30.01	[-31.78, 91.80]	3.56	[-57.20, 64.31]
Year Two (N = 9,258)	-44.31	[-119.76, 31.13]	-63.69	[-139.03, 11.65]
Overall (N = 10,428)	-8.27	[-59.98, 43.44]	-31.08	[-89.79, 27.64]
Dually eligible beneficiaries only				
Year One (N = 6,432)	37.31	[-54.52, 129.15]	25.22	[-51.78, 102.22]
Year Two (N = 6,959)	-52.93	[-130.17, 24.31]	-21.32	[-95.16, 52.52]
Overall (N = 7,850)	-8.92	[-71.72, 53.88]	1.38	[-65.07, 67.82]
Rural beneficiaries only				
Year One (N = 1,237)	64.65*	[9.26, 120.04]	42.86	[-24.13, 109.85]
Year Two (N = 1,305)	-355.35*	[-485.19, -225.50]	-3.99	[-70.80, 62.82]
Overall (N = 1,434)	-148.49*	[-217.66, -79.33]	19.08	[-35.46, 73.62]

(continued)

**Table 10-11 (continued)**  
**Pennsylvania: Comparison of average change estimates for total PBPM Medicare expenditures among special populations:**  
**First 2 years of MAPCP Demonstration**

Population	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Non-White beneficiaries only				
Year One (N = 5,358)	41.46	[-26.17, 109.08]	30.45	[-59.21, 120.11]
Year Two (N = 5,959)	-23.78	[-135.63, 88.08]	-31.25	[-126.91, 64.40]
Overall (N = 6,760)	7.27	[-66.80, 81.35]	-1.88	[-82.59, 78.82]
Northeast region only				
Year One (N = 19,276)	57.28*	[5.92, 108.65]	1.41	[-52.70, 55.53]
Year Two (N = 20,614)	-25.70	[-54.74, 3.34]	-29.95	[-75.47, 15.56]
Overall (N = 22,547)	15.07	[-8.81, 38.95]	-14.54	[-61.79, 32.70]
Southeast region only				
Year One (N = 11,097)	7.24	[-49.18, 63.66]	-7.52	[-70.88, 55.84]
Year Two (N = 12,168)	-44.46	[-109.67, 20.74]	-58.57	[-124.10, 6.96]
Overall (N = 13,803)	-19.69	[-75.03, 35.65]	-34.11	[-93.03, 24.80]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique CCI participants eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CCI = Chronic Care Initiative; CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- Relative to beneficiaries with multiple chronic conditions in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **total Medicare expenditures**, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **total Medicare expenditures**, though the *overall* estimate is not statistically significant.
- The *overall* growth in **total Medicare expenditures** is \$68.98 slower among beneficiaries with behavioral health conditions in demonstration practices relative to PCMH practices.

- The *overall* growth in **total Medicare expenditures** is \$148.49 slower among beneficiaries in demonstration practices relative to rural beneficiaries in PCMH practices.

Although there was no significant association between CCI and total Medicare expenditures among beneficiaries with multiple chronic conditions in CCI practices, relative to beneficiaries in PCMH or non-PCMH comparison practices, we expect care management to have a greater impact on outcomes for this population. In the next subsection, we further explore the association of CCI with outcomes for Medicare beneficiaries with multiple chronic conditions.

### **Beneficiaries with Multiple Chronic Conditions**

Care management potentially could have greater effects on populations with multiple chronic conditions than on the general population. In the next five tables, we consider the association between CCI and the subpopulation of beneficiaries with multiple chronic conditions, looking at quality of care, access to care, and expenditures among this population. The CCI group and the PCMH and non-PCMH comparison groups are limited to beneficiaries with multiple chronic conditions. Estimates in **Table 10-12** are interpreted as the percentage point difference associated with CCI in the likelihood of the receiving the service in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the likelihood of receiving care, while a *positive* value corresponds to an *increase* in the likelihood. CCI beneficiaries with multiple chronic conditions are expected to have more positive values for all indicators, except the ‘none’ indicator in diabetes care.

Avoidable catastrophic events and PQI admissions per 1,000 beneficiary quarters are reported in **Table 10-13**. Estimates in **Table 10-13** are interpreted as the difference in the rate of events associated with CCI in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events. If CCI is associated with improved access to ambulatory care, we would expect CCI beneficiaries with multiple chronic conditions to have reduced rate (i.e., a significant negative value) of these avoidable hospitalizations. More detail on the process of care and health outcomes can be found in **Section 10.3.2**.

**Table 10-12**  
**Pennsylvania: Comparison of average change estimates for process of care indicators**  
**among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
HbA1c testing				
Year One (N = 2,032)	-0.34	[-1.52, 0.84]	1.78	[-0.27, 3.84]
Year Two (N = 1,336)	0.84	[-0.63, 2.30]	-0.47	[-3.56, 2.63]
Overall (N = 2,106)	0.12	[-0.86, 1.09]	0.91	[-1.08, 2.90]
Retinal eye examination				
Year One (N = 2,032)	4.55*	[1.69, 7.41]	0.53	[-2.95, 4.01]
Year Two (N = 1,336)	-2.09	[-6.97, 2.79]	-1.57	[-5.09, 1.95]
Overall (N = 2,106)	1.96	[-1.38, 5.30]	-0.29	[-3.17, 2.59]
LDL-C screening				
Year One (N = 2,032)	1.00	[-0.84, 2.84]	3.76*	[0.67, 6.86]
Year Two (N = 1,336)	0.71	[-1.69, 3.10]	1.35	[-2.63, 5.33]
Overall (N = 2,106)	0.89	[-0.85, 2.63]	2.82	[-0.09, 5.74]
Medical attention for nephropathy				
Year One (N = 2,032)	-1.95	[-5.19, 1.28]	3.40*	[1.16, 5.63]
Year Two (N = 1,336)	-4.84*	[-8.75, -0.92]	-0.27	[-2.83, 2.28]
Overall (N = 2,106)	-3.08	[-6.37, 0.22]	1.97*	[0.02, 3.91]
Received all 4 diabetes tests				
Year One (N = 2,032)	1.29	[-1.17, 3.74]	2.99	[-0.80, 6.78]
Year Two (N = 1,336)	-4.24*	[-7.64, -0.83]	-1.35	[-4.98, 2.28]
Overall (N = 2,106)	-0.86	[-3.08, 1.36]	1.30	[-1.68, 4.28]
Received none of the 4 diabetes tests				
Year One (N = 2,032)	-0.14	[-0.83, 0.55]	-0.01	[-0.82, 0.81]
Year Two (N = 1,336)	0.14	[-0.40, 0.68]	0.26	[-0.80, 1.33]
Overall (N = 2,106)	-0.03	[-0.50, 0.44]	0.10	[-0.61, 0.81]
Total lipid panel				
Year One (N = 4,050)	1.95	[-0.55, 4.45]	1.52	[-0.87, 3.92]
Year Two (N = 2,735)	2.60	[-0.39, 5.59]	0.80	[-2.51, 4.12]
Overall (N = 4,387)	2.21	[-0.26, 4.67]	1.24	[-1.20, 3.68]

NOTES:

- All measures are annual, dichotomous (yes/no) outcomes.
- Numbers in parentheses represent sample sizes of unique CCI participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the percentage point difference in the likelihood of meeting the quality indicator among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of meeting the quality indicator. A *positive* value corresponds to an *increase* in the likelihood of meeting the quality indicator.

CCI = Chronic Care Initiative; CG = comparison group; LDL-C = low-density lipoprotein cholesterol; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a negative trend toward receiving **medical attention for nephropathy** among demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in the likelihood that demonstration beneficiaries received **medical attention for nephropathy** by 1.97 percentage points. The lack of statistical significance in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the Year Two estimate suggests a negative trend towards receiving **all four diabetes tests** among demonstration beneficiaries, though at this time the *overall* estimate is not statistically significant.

**Table 10-13**  
**Pennsylvania: Comparison of average change estimates for health outcomes among**  
**Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Avoidable catastrophic events <sup>1</sup>				
Year One (N = 8,039)	-1.87	[-4.18, 0.44]	0.40	[-1.72, 2.52]
Year Two (N = 7,938)	-3.79	[-11.40, 3.82]	-1.12	[-3.14, 0.91]
Overall (N = 9,312)	-2.80	[-7.35, 1.76]	-0.33	[-1.95, 1.28]
PQI admissions—overall <sup>2</sup>				
Year One (N = 8,039)	5.18*	[0.31, 10.04]	2.06	[-2.67, 6.79]
Year Two (N = 7,938)	-4.44	[-9.99, 1.11]	-0.49	[-4.97, 3.99]
Overall (N = 9,312)	0.52	[-2.73, 3.76]	0.83	[-3.25, 4.90]
PQI admissions—acute <sup>3</sup>				
Year One (N = 8,039)	1.90	[-0.94, 4.74]	0.30	[-1.80, 2.41]
Year Two (N = 7,938)	0.22	[-1.52, 1.96]	-0.62	[-2.69, 1.45]
Overall (N = 9,312)	1.09	[-0.98, 3.15]	-0.14	[-2.00, 1.71]
PQI admissions—chronic <sup>4</sup>				
Year One (N = 8,039)	2.87	[-0.01, 5.75]	1.52	[-1.83, 4.86]
Year Two (N = 7,938)	-4.85	[-10.13, 0.43]	-0.11	[-3.42, 3.21]
Overall (N = 9,312)	-0.87	[-3.62, 1.88]	0.73	[-2.10, 3.56]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique CCI participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

<sup>1</sup> Defined as inpatient encounters with the following primary diagnoses: hip fracture, acute myocardial infarction, acute cerebrovascular accident (stroke), and sepsis.

<sup>2</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, bacterial pneumonia, urinary tract infection, dehydration, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

<sup>3</sup> Defined as inpatient admissions for bacterial pneumonia, urinary tract infection, and dehydration.

<sup>4</sup> Defined as inpatient admissions for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, COPD or asthma in older adults, angina without procedure, hypertension, asthma in younger adults, and lower-extremity amputation among patients with diabetes.

CCI = Chronic Care Initiative; CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home; PQI = Prevention Quality Indicator.

\* Statistically significant at the 10 percent level.

The table above reports covariate-adjusted differences in several quality of care outcomes across the MAPCP Demonstration and two comparison groups: PCMHs that were not in CCI and non-PCMHs.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **potentially avoidable catastrophic events** or **PQI admissions** among demonstration beneficiaries.

**Table 10-14** reports covariate-adjusted differences in several utilization outcomes that are indicators of access to and coordination of care across CCI and two comparison groups—PCMHs and non-PCMHs—for patients with multiple chronic conditions. With the exception of primary care visits as percentage of total ambulatory care visits and the continuity of care index, all outcomes reported are rates of events per 1,000 beneficiary quarters or per 1,000 beneficiaries with a live discharge. Estimates for these outcomes are interpreted as the difference in the rate of events associated with CCI in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events, while a *positive* value corresponds to an *increase* in the rate of events.

Values for the continuity of care index and primary care visits as a percentage of total ambulatory care visits are categorized by quintiles of the outcome distribution. The lowest (first) quintile corresponds to a low percentage of primary care visits and low continuity of care. The highest (fifth) quintile corresponds to a high percentage of primary care visits and high continuity of care. CCI beneficiaries are expected to have a primary care visit percentage and continuity of care index more likely to be in the fifth quintile and less likely to be in the first quintile.

These outcomes were modeled using ordered logit analysis. For simplicity and ease of interpretation, we only present results for the change in the likelihood of being in the upper and lower quintiles. Estimates for these outcomes are interpreted as the percentage point difference associated with CCI in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall. A *positive* value corresponds to an *increase* in the likelihood of observing a value in either the lowest or highest quintile, while a *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest or highest quintile. More detail on these access to care and coordination of care outcomes can be found in **Section 10.4.2**.

**Table 10-14**  
**Pennsylvania: Comparison of average change estimates for access to care and coordination**  
**of care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Primary care visits (per 1,000 beneficiary quarters)				
Year One (N = 8,039)	158.38*	[37.80, 278.96]	147.88*	[59.14, 236.62]
Year Two (N = 7,938)	105.87*	[30.03, 181.71]	108.83*	[31.57, 186.08]
Overall (N = 9,312)	132.95*	[37.01, 228.90]	128.97*	[49.81, 208.13]
Medical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 8,039)	-53.65	[-110.12, 2.83]	-16.87	[-72.80, 39.06]
Year Two (N = 7,938)	-18.16	[-96.90, 60.58]	-18.04	[-88.25, 52.18]
Overall (N = 9,312)	-36.46	[-91.92, 19.00]	-17.43	[-75.28, 40.42]
Surgical specialist visits (per 1,000 beneficiary quarters)				
Year One (N = 8,039)	-7.20	[-29.11, 14.71]	4.82	[-9.37, 19.02]
Year Two (N = 7,938)	-1.47	[-21.58, 18.65]	0.75	[-17.49, 18.99]
Overall (N = 9,312)	-4.42	[-24.07, 15.23]	2.85	[-11.38, 17.08]
Primary care visits as percentage of total visits (higher quintile = larger percentage)				
Year One (N = 8,199)				
1st quintile	-1.97	[-4.52, 0.58]	-3.56*	[-5.82, -1.30]
5th quintile	1.59	[-0.26, 3.44]	1.76*	[0.57, 2.95]
Year Two (N = 5,647)				
1st quintile	-2.82	[-7.31, 1.67]	-3.88*	[-6.23, -1.53]
5th quintile	2.10	[-0.77, 4.97]	1.79*	[0.66, 2.92]
Overall (N = 8,345)				
1st quintile	-2.31	[-5.52, 0.89]	-3.69*	[-5.77, -1.61]
5th quintile	1.80	[-0.35, 3.94]	1.77*	[0.70, 2.84]
Follow-up visit within 14 days after discharge (per 1,000 beneficiaries with a live discharge)				
Year One (N = 2,308)	32.20	[-12.21, 76.61]	27.16	[-12.41, 66.73]
Year Two (N = 1,931)	66.53	[-11.30, 144.36]	53.14*	[8.10, 98.19]
Overall (N = 3,490)	47.80	[-8.70, 104.31]	38.97*	[5.96, 71.99]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)				
Year One (N = 2,796)	-11.37	[-40.45, 17.72]	-21.07	[-52.46, 10.32]
Year Two (N = 2,356)	-14.14	[-42.42, 14.14]	-24.26	[-52.69, 4.17]
Overall (N = 4,166)	-12.63	[-37.66, 12.40]	-22.52	[-46.42, 1.37]

(continued)

**Table 10-14 (continued)**  
**Pennsylvania: Comparison of average change estimates for access to care and coordination of care among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Continuity of care (higher quintile = better continuity of care)				
Year One (N = 8,804)				
1st quintile	-0.03	[-1.24, 1.19]	-0.78	[-2.40, 0.84]
5th quintile	0.03	[-1.02, 1.07]	0.40	[-0.45, 1.25]
Year Two (N = 6,172)				
1st quintile	-1.85	[-4.27, 0.57]	-2.77*	[-5.51, -0.03]
5th quintile	1.62	[-0.33, 3.57]	1.45*	[0.01, 2.89]
Overall (N = 8,919)				
1st quintile	-0.77	[-2.33, 0.80]	-1.58	[-3.43, 0.26]
5th quintile	0.67	[-0.63, 1.97]	0.82	[-0.15, 1.80]

NOTES:

- Office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are rates per 1,000 person quarters. Primary care visits as a percentage of total visits and continuity of care index are measures ranging from zero to one. For these zero-to-one measures, we report results on the probability of being in the lowest or highest quintiles of the distribution.
- Numbers in parentheses represent sample sizes of unique CCI participants with multiple chronic conditions who were eligible for the measure.
- Estimates for office visits, follow-up visits within 14 days of discharge, and 30-day unplanned readmissions are interpreted as the difference in the rate of events among demonstration beneficiaries with multiple chronic conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Estimates for primary care visits as a percentage of total and the continuity of care index are interpreted as the percentage point difference among demonstration beneficiaries with multiple chronic conditions in the probability of observing a value in either the lowest (first) quintile or highest (fifth) quintile of the distribution in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile. A *positive* value corresponds to an *increase in the* likelihood of observing a value in either the lowest (first) quintile or highest (fifth) quintile.
- Except for annual outcomes (primary care visits as a percentage of total visits and continuity of care index), Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with multiple chronic conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with multiple chronic conditions attributed during the year(s).

CCI = Chronic Care Initiative; CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in the rate of **primary care visits** among demonstration beneficiaries by 132.95 per 1,000 beneficiary quarters.

- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in the rate of **primary care visits** among demonstration beneficiaries by 128.97 per 1,000 beneficiary quarters.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the overall estimate indicates that the demonstration is associated with an increase in primary care visits as a share of total visits. Specifically, the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's primary care visits as percent of total visits was in the lower quintile and increase in the likelihood that it was in the upper quintile. The upper quintile represents beneficiaries with multiple chronic conditions who had the highest percentage of visits in the primary care setting.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the *overall* estimate indicates that the demonstration is associated with an increase in the rate of **follow-up visit within 14 days after discharge** among demonstration beneficiaries by 38.97 per 1,000 beneficiaries with a live discharge.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, the Year Two estimate suggests a trend toward an increase in continuity of care, as measured by concentration of visits, though the *overall* estimates are not statistically significant. Specifically, in Year Two the demonstration is associated with a decrease in the likelihood that a demonstration beneficiary's continuity of care index was in the lowest quintile and an increase in the likelihood that the continuity of care index was in the highest quintile. The highest quintile represents beneficiaries with multiple chronic conditions whose ambulatory visits were most concentrated with their PCMH providers or providers referred by their PCMH providers, while the lower quintile represents beneficiaries whose visits were least concentrated with their PCMH providers and referred providers.

**Tables 10-15** and **10-16** report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, between beneficiaries with multiple chronic conditions attributed to CCI practices and two comparison groups: beneficiaries with multiple chronic conditions attributed to PCMH comparison practices and beneficiaries with multiple chronic conditions attributed to non-PCMHs practices. Estimates in **Table 10-15** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*.

The MAPCP Demonstration also is expected to result in lower utilization of services such as all-cause admissions and ER care. **Table 10-16** contains the results of these analyses. Estimates in this table are interpreted as the difference in the rate of all-cause admissions and ER visits not leading to hospitalization per 1,000 beneficiary quarters associated with CCI in either Year One, Year Two, or both years overall. A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events. More detail on these expenditure and utilization outcomes can be found in **Section 10.6.2**.

**Table 10-15**  
**Pennsylvania: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
<b>Total Medicare</b>				
Year One (N = 8,039)	107.94	[-40.91, 256.79]	-29.71	[-133.42, 74.00]
Year Two (N = 7,938)	-166.89*	[-253.00, -80.77]	-114.35*	[-202.46, -26.23]
Overall (N = 9,312)	-25.14	[-91.74, 41.46]	-70.69	[-151.33, 9.94]
<b>Acute-care</b>				
Year One (N = 8,039)	37.31	[-14.98, 89.59]	-6.36	[-69.18, 56.46]
Year Two (N = 7,938)	-66.50*	[-117.77, -15.23]	-23.26	[-74.39, 27.88]
Overall (N = 9,312)	-12.96	[-48.12, 22.20]	-14.54	[-61.35, 32.26]
<b>Post-acute-care</b>				
Year One (N = 8,039)	54.20*	[19.00, 89.41]	-3.47	[-41.29, 34.35]
Year Two (N = 7,938)	-43.08*	[-82.63, -3.52]	-55.06*	[-88.96, -21.17]
Overall (N = 9,312)	7.10	[-9.02, 23.21]	-28.45	[-59.49, 2.59]
<b>ER</b>				
Year One (N = 8,039)	-1.04	[-11.61, 9.52]	-0.80	[-3.91, 2.30]
Year Two (N = 7,938)	-8.03*	[-10.49, -5.56]	-4.88*	[-8.44, -1.31]
Overall (N = 9,312)	-4.42	[-9.96, 1.11]	-2.77	[-5.57, 0.03]
<b>Outpatient</b>				
Year One (N = 8,039)	-16.97	[-40.21, 6.27]	3.11	[-14.97, 21.20]
Year Two (N = 7,938)	-38.26*	[-54.15, -22.36]	-5.97	[-25.21, 13.27]
Overall (N = 9,312)	-27.28*	[-43.88, -10.68]	-1.28	[-16.63, 14.06]
<b>Specialty physician</b>				
Year One (N = 8,039)	7.81	[-16.59, 32.22]	-9.43	[-24.80, 5.94]
Year Two (N = 7,938)	1.25	[-15.03, 17.53]	-14.09	[-28.34, 0.16]
Overall (N = 9,312)	4.64	[-15.17, 24.44]	-11.69	[-24.96, 1.59]
<b>Primary care physician</b>				
Year One (N = 8,039)	5.54*	[2.53, 8.56]	-0.55	[-4.98, 3.87]
Year Two (N = 7,938)	-6.77*	[-12.13, -1.40]	-6.28*	[-10.74, -1.81]
Overall (N = 9,312)	-0.42	[-3.17, 2.34]	-3.32	[-7.26, 0.61]
<b>Home health</b>				
Year One (N = 8,039)	9.05*	[1.84, 16.26]	-1.97	[-11.39, 7.45]
Year Two (N = 7,938)	-7.33*	[-14.41, -0.25]	-13.27*	[-24.85, -1.70]
Overall (N = 9,312)	1.12	[-4.72, 6.96]	-7.44	[-17.01, 2.12]
<b>Other non-facility</b>				
Year One (N = 8,039)	-7.96	[-25.76, 9.83]	-12.38	[-25.38, 0.62]
Year Two (N = 7,938)	-9.40	[-23.46, 4.66]	-9.18	[-20.38, 2.02]
Overall (N = 9,312)	-8.66	[-24.04, 6.72]	-10.83	[-21.76, 0.10]

(continued)

**Table 10-15 (continued)**  
**Pennsylvania: Comparison of average change estimates for expenditures among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Laboratory				
Year One (N = 8,039)	0.75	[-1.71, 3.21]	-2.01*	[-3.92, -0.10]
Year Two (N = 7,938)	-1.44	[-2.99, 0.12]	-1.95*	[-3.84, -0.06]
Overall (N = 9,312)	-0.31	[-2.07, 1.45]	-1.98*	[-3.65, -0.31]
Imaging				
Year One (N = 8,039)	-0.46	[-3.70, 2.77]	0.05	[-2.40, 2.50]
Year Two (N = 7,938)	-1.93	[-4.93, 1.08]	0.85	[-1.90, 3.61]
Overall (N = 9,312)	-1.17	[-4.16, 1.81]	0.44	[-1.92, 2.80]
Other facility				
Year One (N = 8,039)	-1.10	[-2.45, 0.26]	-1.07*	[-2.02, -0.11]
Year Two (N = 7,938)	-0.27	[-0.90, 0.36]	-0.45	[-1.06, 0.16]
Overall (N = 9,312)	-0.69	[-1.42, 0.03]	-0.77*	[-1.47, -0.07]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique CCI participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).
- Outpatient expenditures include expenditures related to FQHCs. Other expenditures include expenditures for other Part B services, durable medical equipment, and hospice.

CCI = Chronic Care Initiative; CG = comparison group; ER = emergency room; FQHC = federally qualified health center; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- Relative to beneficiaries with multiple chronic conditions in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **total Medicare expenditures, acute-care expenditures, post-acute-care expenditures, and expenditures for ER visits not leading to a hospitalization**, though the *overall* estimates are not statistically significant.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **total Medicare expenditures, post-acute-care expenditures, and expenditures for ER visits not leading to a hospitalization**, though the *overall* estimates are not statistically significant.

- The *overall* growth in **outpatient (including FQHCs) expenditures** is \$27.28 less among beneficiaries in demonstration practices relative to beneficiaries with multiple chronic conditions in PCMH practices.
- Relative to beneficiaries with multiple chronic conditions in non-PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **primary care expenditures** and **home health expenditures**, though the *overall* estimates are not statistically significant.
- The *overall* growth in **laboratory** and **other facility expenditures** is slower among beneficiaries in demonstration practices relative to beneficiaries with multiple chronic conditions in non-PCMH practices. The lack of statistical significance in the estimate in Year Two for other facility expenditures relative to non-PCMH practices, however, makes it uncertain whether this association will persist into Year Three.

**Table 10-16**  
**Pennsylvania: Comparison of average change estimates for utilization among Medicare beneficiaries with multiple chronic conditions:**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause admissions				
Year One (N = 8,039)	10.46*	[3.38, 17.53]	15.90*	[1.96, 29.85]
Year Two (N = 7,938)	-19.25	[-45.14, 6.64]	0.04	[-10.28, 10.36]
Overall (N = 9,312)	-3.93	[-16.82, 8.96]	8.22	[-2.29, 18.73]
ER visits not leading to hospitalization				
Year One (N = 8,039)	7.68	[-13.49, 28.85]	9.34	[-15.00, 33.68]
Year Two (N = 7,938)	-13.68	[-34.03, 6.68]	-15.18	[-34.09, 3.73]
Overall (N = 9,312)	-2.66	[-18.25, 12.93]	-2.53	[-22.20, 17.14]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique CCI participants with multiple chronic conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CCI = Chronic Care Initiative; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries with multiple chronic conditions assigned to PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **all-cause admissions** or **ER visits not leading to a hospitalization** among demonstration beneficiaries.
- When using beneficiaries with multiple chronic conditions assigned to non-PCMH practices as a comparison group, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of **all-cause admissions** or **ER visits not leading to a hospitalization** among demonstration beneficiaries.

The CCI was associated with significant changes in total Medicare expenditures among beneficiaries with behavioral conditions as expected. Specifically the *overall* growth in total Medicare expenditures is slower among beneficiaries with behavioral health conditions in demonstration practices relative to PCMH practices. In the next subsection, we further explore the association between CCI and Medicare beneficiaries with behavioral health conditions.

### Beneficiaries with Behavioral Health Conditions

*Tables 10-17* and *10-18* report covariate-adjusted differences in selected expenditure and utilization outcomes, respectively, for Medicare beneficiaries with behavioral health conditions in CCI compared to two comparison groups: PCMHs and non-PCMHs. Research has shown that individuals with psychosocial and substance abuse disorders have substantial unmet need for health care. Within the medical home, significant care management and coordination resources may be required to meet the needs of these patients. In CCI, there were no targeted interventions implemented to improve utilization of health services and quality of care specifically for individuals with mental illness and substance abuse disorders. These individuals, however, were expected to benefit from the initiatives to improve access to, coordination of, and continuity of care with primary care and behavioral health providers.

CCI was expected to increase care coordination between primary care providers and behavioral health providers for beneficiaries with mental illnesses and substance abuse disorders. Improved access and care coordination may increase use of outpatient behavioral health services and primary care visits, and, in turn, more appropriate use of outpatient care may lead to decreased rates of hospitalizations and ER visits (both overall and for behavioral health conditions specifically). Given the potential impact on both nonbehavioral health and behavioral service use, we examined both types of service use and expenditures.

For this analysis, beneficiaries with behavioral health conditions are defined as those with at least one inpatient claim and/or two or more outpatient claims with a primary diagnosis of a mental health or substance abuse disorder in the demonstration year. Using this criterion, 13.2 percent of the study sample was identified as having a behavioral health condition.<sup>4</sup> The expenditure outcomes of interest include total Medicare expenditures, expenditures for acute

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<sup>4</sup> Behavioral health conditions were present in 15.2 percent of the MAPCP Demonstration sample, 13.6 percent of the PCMH comparison sample, and 12.1 percent of the non-PCMH comparison sample.

hospitalizations, expenditures for ER visits, total Medicare expenditures for which the primary diagnosis on the claim was a mental health or substance abuse disorder (hereafter referred to as behavioral health disorders), and total Medicare expenditures for which a secondary diagnosis on the claim was a behavioral health disorder. All expenditures represent average PBPM payments. The service utilization outcomes of interest included all-cause inpatient admissions, all-cause ER visits, outpatient visits with a primary diagnosis of a behavioral health disorder, inpatient admissions with primary diagnosis of behavioral health disorder, and ER visits with a primary diagnosis of a behavioral health disorder. All utilization measures represent a quarterly rate of visits per 1,000 beneficiaries.

Estimates in **Table 10-17** are interpreted as the difference in the rate of growth in PBPM expenditures relative to the comparison group. A *negative* value corresponds to *slower growth* in expenditures, while a *positive* value corresponds to *faster growth*. Estimates in **Table 10-18** are interpreted as the difference in the rate of utilization associated with the MAPCP Demonstration. A *negative* value corresponds to a *decrease* in the rate of utilization, while a *positive* value corresponds to an *increase* in the rate of utilization.

**Table 10-17**  
**Pennsylvania: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total Medicare				
Year One (N = 4,483)	-16.28	[-84.11, 51.55]	-95.90	[-195.01, 3.22]
Year Two (N = 4,746)	-120.83*	[-234.49, -7.17]	-112.39	[-262.90, 38.12]
Overall (N = 5,514)	-68.98*	[-137.12, -0.84]	-104.21	[-215.29, 6.86]
Acute-care				
Year One (N = 4,483)	-3.71	[-62.85, 55.42]	-49.57	[-104.20, 5.07]
Year Two (N = 4,746)	-57.77	[-116.92, 1.39]	-46.87	[-130.40, 36.65]
Overall (N = 5,514)	-30.96	[-80.29, 18.37]	-48.21	[-109.62, 13.20]
ER visits not leading to hospitalization				
Year One (N = 4,483)	-4.17	[-9.10, 0.75]	1.45	[-2.84, 5.74]
Year Two (N = 4,746)	-0.71	[-3.78, 2.35]	-0.74	[-6.13, 4.64]
Overall (N = 5,514)	-2.43	[-5.62, 0.76]	0.35	[-3.85, 4.54]
Total for services with a principal diagnosis of a behavioral health condition				
Year One (N = 4,483)	7.20*	[1.16, 13.23]	-1.65	[-10.56, 7.26]
Year Two (N = 4,746)	2.72	[-2.43, 7.86]	-2.41	[-8.12, 3.30]
Overall (N = 5,514)	4.94*	[0.26, 9.62]	-2.03	[-8.49, 4.42]

(continued)

**Table 10-17 (continued)**  
**Pennsylvania: Comparison of average change estimates for PBPM Medicare expenditures**  
**among beneficiaries with behavioral health conditions:**  
**First 2 years of MAPCP Demonstration**

Type of expenditure	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Total for services with a secondary diagnosis of a behavioral health condition				
Year One (N = 4,483)	-20.78	[-46.36, 4.80]	-42.48*	[-79.74, -5.21]
Year Two (N = 4,746)	-29.83*	[-58.47, -1.18]	-32.53	[-92.65, 27.59]
Overall (N = 5,514)	-25.34*	[-44.05, -6.63]	-37.46	[-80.28, 5.36]

NOTES:

- All measures are PBPM expenditures.
- Numbers in parentheses represent sample sizes of unique CCI participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

CCI = Chronic Care Initiative; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures and expenditures for services with a secondary diagnosis of behavioral health condition** is slower among beneficiaries in demonstration practices relative to beneficiaries with behavioral health conditions in PCMH practices.
- The *overall* growth in **expenditures for services with a primary diagnosis of behavioral health condition** is faster among beneficiaries in demonstration practices relative to beneficiaries with behavioral health conditions in PCMH practices.

**Table 10-18**  
**Pennsylvania: Comparison of average change estimates for behavioral and nonbehavioral health care utilization among beneficiaries with behavioral health conditions: First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs		CCI PCMHs vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
All-cause inpatient admissions				
Year One (N = 4,483)	3.73	[-8.40, 15.85]	7.38	[-1.68, 16.44]
Year Two (N = 4,746)	-14.55	[-31.03, 1.94]	0.70	[-9.06, 10.45]
Overall (N = 5,514)	-5.48	[-18.50, 7.53]	4.01	[-3.81, 11.84]
ER visits not leading to hospitalization				
Year One (N = 4,483)	3.79	[-16.56, 24.13]	12.23	[-7.41, 31.87]
Year Two (N = 4,746)	8.61	[-8.01, 25.24]	6.37	[-16.47, 29.21]
Overall (N = 5,514)	6.22	[-10.41, 22.85]	9.28	[-10.04, 28.59]
Behavioral health inpatient admissions				
Year One (N = 4,483)	1.38	[-0.03, 2.79]	0.36	[-1.09, 1.80]
Year Two (N = 4,746)	0.47	[-0.51, 1.46]	0.32	[-0.71, 1.36]
Overall (N = 5,514)	0.92	[-0.07, 1.91]	0.34	[-0.63, 1.31]
Behavioral health ER visits				
Year One (N = 4,483)	0.38	[-4.54, 5.30]	2.03	[-2.84, 6.89]
Year Two (N = 4,746)	2.71	[-1.25, 6.68]	3.08	[-2.01, 8.16]
Overall (N = 5,514)	1.56	[-2.37, 5.48]	2.56	[-1.89, 7.00]
Behavioral health outpatient visits <sup>1</sup>				
Year One (N = 4,289)	86.01*	[29.26, 142.76]	19.30	[-37.12, 75.71]
Year Two (N = 4,514)	21.92	[-40.13, 83.98]	-39.09	[-95.95, 17.77]
Overall (N = 5,325)	53.84	[-2.42, 110.09]	-10.02	[-60.78, 40.75]

NOTES:

- All measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique CCI participants with behavioral health conditions who were eligible for the measure.
- Estimates in this table are interpreted as the difference in the rate of events among demonstration beneficiaries with behavioral health conditions in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year(s).

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes, because outliers were removed. Specifically, we removed observations for which the number of visits exceeded the 90th percentile of the distribution.

CCI = Chronic Care Initiative; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- When using beneficiaries assigned to either PCMH or non-PCMH practices as comparison groups, there are no statistically significant *overall* estimates indicating that the demonstration is associated with changes in the rates of utilization among demonstration beneficiaries with behavioral health conditions.

As reported in *Table 10-11*, the overall growth in total Medicare expenditures was \$148.49 slower for Medicare beneficiaries attributed to CCI practices and living in rural areas relative to Medicare beneficiaries attributed to all PCMH comparison practices and living in rural areas. In the following subsection, we report more detailed expenditure and utilization outcomes for this population, to provide additional information about what may have driven the reductions in Medicare expenditures.

### Beneficiaries Living in Rural Areas

About 4 percent of CCI beneficiaries were living in rural areas. Since beneficiaries living in rural areas and attributed to CCI practices experienced significantly slower rates of total Medicare expenditure growth relative to beneficiaries living in rural areas and attributed to PCMH comparison practices, we examined additional expenditure and utilization outcomes to gain a better understanding of the slower expenditure growth. These results are presented in *Table 10-19*.

**Table 10-19**  
**Pennsylvania: Comparison of average change estimates for selected expenditure and utilization measures among rural Medicare beneficiaries**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs	
	Average estimate	90% confidence interval
Total Medicare expenditures		
Year One (N = 1,237)	64.65*	[9.26, 120.04]
Year Two (N = 1,305)	-355.35*	[-485.19, -225.50]
Overall (N = 1,434)	-148.49*	[-217.66, -79.33]
Acute-care expenditures		
Year One (N = 1,237)	35.66*	[2.91, 68.41]
Year Two (N = 1,305)	-290.88*	[-390.38, -191.37]
Overall (N = 1,434)	-130.05*	[-186.36, -73.75]
ER visits not leading to hospitalization expenditures		
Year One (N = 1,237)	3.44*	[0.53, 6.34]
Year Two (N = 1,305)	2.46	[-0.03, 4.96]
Overall (N = 1,434)	2.94*	[1.08, 4.80]
Specialty physician expenditures		
Year One (N = 1,237)	10.14	[-15.95, 36.23]
Year Two (N = 1,305)	-33.71*	[-46.73, -20.69]
Overall (N = 1,434)	-12.11	[-29.78, 5.56]
Primary care physician expenditures		
Year One (N = 1,237)	2.20	[-1.60, 6.00]
Year Two (N = 1,305)	-10.13*	[-19.27, -1.00]
Overall (N = 1,434)	-4.06	[-9.51, 1.39]

(continued)

**Table 10-19 (continued)**  
**Pennsylvania: Comparison of average change estimates for selected expenditure and utilization measures among rural Medicare beneficiaries**  
**First 2 years of MAPCP Demonstration**

Outcome	CCI PCMHs vs. CG PCMHs	
	Average estimate	90% confidence interval
All-cause admissions		
Year One (N = 1,237)	11.69	[-34.22, 57.61]
Year Two (N = 1,305)	-44.82	[-219.42, 129.77]
Overall (N = 1,434)	-16.99	[-83.52, 49.55]
ER visits not leading to a hospitalization		
Year One (N = 1,237)	20.44	[-36.97, 77.85]
Year Two (N = 1,305)	8.79	[-18.99, 36.58]
Overall (N = 1,434)	14.53	[-26.75, 55.81]
30-day unplanned readmissions (per 1,000 beneficiaries with a live discharge)		
Year One (N = 207)	-208.97	[-1373.32, 955.38]
Year Two (N = 197)	-262.78	[-1724.64, 1199.07]
Overall (N = 358)	-234.27	[-1537.69, 1069.15]

NOTES:

- Total Medicare expenditures, acute-care expenditures, and ER expenditure measures are PBPM expenditures.
- Estimates for the first two outcomes are interpreted as the difference in the rate of growth in expenditures relative to the CG in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- All-cause admissions, ER visits not leading to a hospitalization, and 30-day unplanned readmissions are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique CCI participants who were eligible for the measure.
- Estimates for the last three outcomes in this table are interpreted as the difference in the rate of events among demonstration beneficiaries in either Year One, Year Two, or both years overall.
- A *negative* value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year One, Year Two, and Overall change estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries attributed to demonstration practices in each quarter divided by total number of beneficiaries attributed during the year(s).

CCI = Chronic Care Initiative; CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

- The *overall* growth in **total Medicare expenditures** is \$148.49 slower among beneficiaries in demonstration practices relative to rural beneficiaries in PCMH practices.
- The *overall* growth in **acute-care expenditures** is \$130.05 slower among rural beneficiaries in demonstration practices relative to rural beneficiaries in PCMH practices.

- The *overall* growth in **expenditures for ER visits not leading to a hospitalization** is \$2.94 faster among rural beneficiaries in demonstration practices relative to rural beneficiaries in PCMH practices. The lack of statistical significance relative to PCMH practices in Year Two, however, makes it uncertain whether this association will persist into Year Three.
- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend toward slower growth in **specialty care physician expenditures** among rural beneficiaries in CCI practices, though the *overall* estimate is not statistically significant.
- Relative to beneficiaries in PCMH practices, a negative estimate in Year Two suggests a potential trend towards slower growth in **primary care physician expenditures** among rural beneficiaries in CCI practices, though the *overall* estimate is not statistically significant.

### 10.7.3 Discussion of Special Populations

In Phase II of CCI, Pennsylvania and the participating practices focused on patients with multiple chronic conditions and high-risk patients. There was evidence that CCI was associated with a small change in expenditures for this population. Year Two average growth in total Medicare expenditures was slower among beneficiaries with multiple chronic conditions assigned to CCI practices relative to beneficiaries with multiple chronic conditions assigned to other PCMH and non-PCMH practices (**Table 10-11**). Quality measures generally were statistically insignificant, but there are several exceptions. These included medical attention for nephropathy, which indicated a higher probability of receiving the recommended care relative to non-PCMH comparison practices in Year One and overall, and receipt of all four diabetes tests, which indicated a lower probability of receiving the recommended care in Year Two (**Table 10-12**). Utilization of primary care and follow-up visits within 14 days after discharge for beneficiaries with multiple chronic conditions changed in the expected direction (**Table 10-14**). In addition, we found that CCI was associated with an increased percentage of total visits that were primary care visits relative to the non-PCMH practices for beneficiaries with multiple chronic conditions (**Table 10-14**). Overall outpatient Medicare expenditures were also slower for this population relative to other PCMH comparison practices (**Table 10-15**).

CCI did not include any special interventions for beneficiaries who were dually eligible for Medicare and Medicaid, those living in rural areas, and those with behavioral health needs, though CCI practices increasingly focused on addressing patients' behavioral health needs. That said, total Medicare expenditures changed in the expected direction for beneficiaries living in rural areas; most of this was driven by changes in acute-care expenditures (**Table 10-19**). Some practices that hired social workers used them to conduct behavioral health screenings and to forge links with behavioral health providers and social service providers. Relative to PCMH comparison group practices, the growth in total Medicare expenditures and expenditures for secondary behavioral health diagnosis is slower for CCI practices but faster for expenditures for primary behavioral health diagnosis (**Tables 10-17 and 10-18**). Given practices' increased focus on patients with behavioral health needs and these second-year results, we should look for further change in this area in Year Three of the demonstration.

## 10.8 Discussion of Pennsylvania's Year Two Findings and Next Steps

During the second year of CCI Phase II, CCI struggled to maintain payer support, and several payers dropped out of the demonstration. Payer attrition combined with a lack of shared savings weakened practice morale and enthusiasm for the demonstration. Against this backdrop, practices continued to engage in a range of transformation activities. Major areas in which many practices reported continued practice transformation efforts included adding or strengthening the role of care managers and, in some cases, social workers, having all practice staff work at the top of their license or take on additional and more advanced roles, and trying to overcome challenges associated with getting timely data from hospitals, specialists, and payers for managing the care of high-risk patients. Generally, these changes did not translate into improved outcomes for Medicare beneficiaries during the demonstration's first year, but Year Two results were more in line with expectations for the demonstration.

Overall, there was some evidence that CCI practices were associated with changes in utilization consistent with the medical home model and the CCI intervention, particularly in Year Two. For the entire Medicare population, there was evidence that CCI practices were associated with the expected shift in the rate of primary care visits relative to other PCMH and non-PCMH practices. There was also evidence that the percent of total visits that were primary care visits increased for Medicare beneficiaries relative to non-PCMH practices. Evidence showed that CCI practices were associated with an improvement in continuity of care relative to non-PCMH practices. Follow-up visits within 14 days after discharge also increased for CCI practices relative to non-PCMH practices (**Table 10-7**). These improvements in access to care and care coordination possibly could be explained by the CCI Phase II requirement that practices have an on-site care manager and practices' efforts since Phase II to focus more closely on improving care coordination, particularly for their high-risk patients. Respondents reported that following up with patients during and after care transitions from the hospital or ER to other facilities was a main focus for care managers over the past year.

There was some evidence that CCI practices are slowing the growth of expenditures in some areas. While expenditures in the first year of the demonstration generally did not show much improvement, gains were made in Year Two. In the second year of the demonstration, the growth in total Medicare expenditures was slower among beneficiaries assigned to CCI practices relative to beneficiaries assigned to PCMH and non-PCMH practice (**Table 10-8**). In the same year, growth in acute-care expenditures was slower among beneficiaries assigned to CCI practices relative to beneficiaries assigned to comparison PCMH and non-PCMH practices. Growth in ER expenditures and outpatient expenditures was slower relative to other PCMH practices. During the site visit, many respondents noted that changing patterns of care took time and that features of CCI intended to reduce hospital and ER utilization and costs might take several years to show changes. The expenditure results showed that the demonstration was starting to be associated with positive changes in Year Two. We will continue to monitor whether these changes continue in Year Three of the demonstration as practices continue working on improving care management services and targeting and outreach for high-risk patients.

For most quality indicators, there were no statistically significant findings when comparing CCI practices to the PCMH and non-PCMH comparison group practices. The lack of

movement on quality measures may have reflected CCI's change in focus from Phase I to Phase II. CCI Phase I focused on practice performance on a range of process and quality measures, while CCI Phase II targeted high-risk patients and focused on limiting unnecessary hospital visits for that population.

There was evidence that CCI was associated with a small change in utilization, expenditures, and quality for special populations targeted in the initiative, specifically patients with multiple chronic conditions and high-risk patients, in Year Two. Generally, results for patients with multiple chronic conditions followed overall results for the entire population of Medicare beneficiaries assigned to CCI practices, but with a larger magnitude, though there were some minor differences. This is consistent with the CCI Phase II focus on providing care management services to high-risk patients. Year Two average growth in total Medicare expenditures was *slower* among beneficiaries with multiple chronic conditions assigned to CCI practices relative to beneficiaries with multiple chronic conditions assigned to other PCMH and non-PCMH practices (**Table 10-11**). Utilization of primary care and the rate of follow-up visits within 14 days after live discharge for beneficiaries with chronic conditions changed in the expected direction. In addition, we found that CCI was associated with an increased percentage of total visits that were primary care visits relative to the non-PCMH practices for beneficiaries with multiple chronic conditions (**Table 10-14**). Quality measures were generally statistically insignificant.

CCI did not include any special interventions for beneficiaries who were dually eligible for Medicare and Medicaid, those living in rural areas, and those with behavioral health needs, though some CCI practices increasingly focused on addressing their patients' behavioral health needs. Total Medicare expenditures changed in the expected direction for beneficiaries living in rural areas, most of which was driven by changes in acute-care expenditures (**Table 10-19**). Some practices that hired social workers used them to conduct behavioral health screenings and to form links with behavioral health providers and social service providers. Relative to PCMH comparison group practices, the growth in total Medicare expenditures and expenditures for secondary behavioral health diagnosis is slower for CCI practices but faster for expenditures for primary behavioral health diagnosis (**Tables 10-17 and 10-18**).

Looking beyond Year Two of the demonstration, practices generally were focused on making improvements to the medical home activities already underway. This includes further strengthening the role of care managers and other staff hired as part of CCI and obtaining more timely data from local hospitals. As previously noted, some practices were becoming increasingly focused on addressing their patients' behavioral health needs. Given practices' increased focus on patients with behavioral health needs, this is an area to watch for further change in Year Three of the demonstration.

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## CHAPTER 11 CONCLUSION

Although much of Year Two was a continuation of activities from Year One or improvement upon them (e.g., refinement of community health teams and care managers), some new activities were common across some state MAPCP Demonstration initiatives. In four states (Rhode Island, Vermont, North Carolina, and Maine), Year Two saw the start of the significant adoption of patient portals with the goal of increasing patients' interaction with their primary care providers. Functionality varied across and within states, but generally patient portals allowed patients to request medication refills, view medication lists, review laboratory test results, request an appointment, view visit summaries, and communicate with providers using secure messaging. Provider satisfaction was generally high. The portals were perceived as time saving and very useful for interacting with patients. This communication may increase contact with primary care providers, but it cannot be observed in claims analysis of primary care visits. As a matter of fact, it is believed to have contributed to a decrease in primary care visits in some states, which in turn may contribute to understanding the lack of significant increases in primary care visits by MAPCP Demonstration beneficiaries in these states during Year Two (except Maine) relative to the comparison practices that were not designated as patient-centered medical homes (PCMHs; **Table 11-1**). In the Final Report we will consider the relationship between patient portals and other alternatives to face-to-face meeting with primary care providers and the utilization rates for primary care providers.

**Table 11-1**  
**Comparison of average demonstration effect estimates for**  
**primary care visits (per 1,000 beneficiary quarters):**  
**Year Two of MAPCP Demonstration**

State	MAPCP practices vs. CG PCMHs		MAPCP practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
Maine (N = 49,727)	42.77	[-41.69, 127.23]	67.98*	[10.60, 125.36]
North Carolina (N = 27,808)	-27.83	[-117.45, 61.80]	-15.25	[-114.55, 84.05]
Rhode Island (N = 9,671)	33.55	[-47.74, 114.83]	0.07	[-48.62, 48.75]
Vermont (N = 62,371)	-52.82	[-112.43, 6.79]	-19.56	[-81.01, 41.89]

**NOTES:**

- Office visits are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MAPCP Demonstration participants eligible for the measure.
- Estimates for office visits are interpreted as the difference in the rate of events relative to the CG in Year Two.
- A *negative* value corresponds to a *decrease* in the rate of events relative to the CG. A *positive* value corresponds to an *increase* in the rate of events relative to the CG.
- Year Two estimates are averages of the four quarterly estimates for the year.

CG = comparison group; MAPCP = Multi-Payer Advanced Primary Care Practice; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

During Year Two, three states (Rhode Island, Vermont, and Maine) initiated actions to better integrate behavioral health care into their PCMH practices. In Rhode Island, the Chronic Care Sustainability Initiative (CSI) formed a new Behavioral Health Integration Workgroup with members representing behavioral health experts from CSI practices, hospitals, the state, and other organizations. Vermont expanded a pilot that tested the model of having psychiatrists go into all practices within one large health group. Vermont's community health teams also increased the number of behavioral health professionals (psychologists, licensed alcohol and drug counselors, addiction nurses, and therapists) on their teams. Many Maine practices enhanced their behavioral health offerings by embedding licensed clinical social workers and part-time psychologists into their practices and by providing their physician staff with continuing medical education activities focused on anxiety and depression management. Given the recent focus on patients with behavioral health conditions, it is not surprising that there was not much significant change in the expenditures on and utilization of services related to behavioral health (*Table 11-2*). However, in the Final Report we will continue to monitor the MAPCP Demonstration beneficiaries with behavioral health conditions, especially in states that target these individuals.

**Table 11-2**  
**Comparison of average demonstration effect estimates for PBPM Medicare expenditures and behavioral health care utilization among beneficiaries with behavioral health conditions:**  
**Year Two of MAPCP Demonstration**

State	MAPCP practices vs. CG PCMHs		MAPCP practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
<b>Total expenditures for services with a principal diagnosis of a behavioral health condition</b>				
Maine (N = 11,891)	5.30	[-5.49, 16.08]	1.35	[-10.43, 13.14]
Rhode Island (N = 2,210)	3.01	[-15.28, 21.30]	8.63	[-2.11, 19.36]
Vermont (N = 9,760)	-8.58*	[-16.25, -0.91]	-4.77	[-10.51, 0.96]
<b>Total expenditures for services with a secondary diagnosis of a behavioral health condition</b>				
Maine (N = 11,891)	5.59	[-37.75, 48.93]	24.66	[-7.80, 57.11]
Rhode Island (N = 2,210)	-34.46	[-115.70, 46.77]	-28.12	[-74.37, 18.13]
Vermont (N = 9,760)	21.38	[-12.66, 55.41]	-4.45	[-31.26, 22.37]
<b>Behavioral health inpatient admissions</b>				
Maine (N = 11,891)	1.14	[-1.20, 3.48]	0.45	[-1.84, 2.74]
Rhode Island (N = 2,210)	0.00	[-1.28, 1.27]	0.05	[-1.08, 1.18]
Vermont (N = 9,760)	-0.38	[-1.64, 0.88]	-1.14	[-2.60, 0.31]
<b>Behavioral health ER visits</b>				
Maine (N = 11,891)	-9.23*	[-17.86, -0.60]	-2.13	[-10.06, 5.80]
Rhode Island (N = 2,210)	3.68	[-3.81, 11.16]	8.67*	[1.77, 15.57]
Vermont (N = 9,760)	-0.63	[-6.44, 5.18]	2.70	[-0.84, 6.24]

(continued)

**Table 11-2 (continued)**  
**Comparison of average demonstration effect estimates for PBPM Medicare expenditures**  
**and behavioral health care utilization among beneficiaries with**  
**behavioral health conditions:**  
**Year Two of MAPCP Demonstration**

State	MAPCP practices vs. CG PCMHs		MAPCP practices vs. CG non-PCMHs	
	Average estimate	90% confidence interval	Average estimate	90% confidence interval
<b>Behavioral health outpatient visits<sup>1</sup></b>				
Maine (N = 11,185)	51.43	[-16.71, 119.58]	8.35	[-71.30, 88.01]
Rhode Island (N = 2,112)	-77.85*	[-138.18, -17.51]	10.65	[-36.93, 58.22]
Vermont (N = 9,152)	7.98	[-28.54, 44.51]	21.93	[-10.87, 54.72]

NOTES:

- All expenditure measures are PBPM expenditures.
- All utilization measures are rates per 1,000 person quarters.
- Numbers in parentheses represent sample sizes of unique MAPCP Demonstration participants with behavioral health conditions who were eligible for the measure.
- Expenditure estimates in this table are interpreted as the difference in the rate of growth in expenditures relative to the CG in Year Two. A *negative* expenditure value corresponds to slower growth in expenditures relative to the CG. A *positive* value corresponds to faster growth relative to the CG.
- Utilization estimates in this table are interpreted as the difference in the rate of events among MAPCP Demonstration beneficiaries with behavioral health conditions in Year Two. A *negative* utilization value corresponds to a *decrease* in the rate of events. A *positive* value corresponds to an *increase* in the rate of events.
- Year Two demonstration effect estimates are calculated as weighted averages of individual quarterly estimates, with weights equal to the number of beneficiaries with behavioral health conditions attributed to demonstration practices in each quarter divided by total number of beneficiaries with behavioral health conditions attributed during the year.

<sup>1</sup> The sample size for behavioral health outpatient visits was lower than for the other outcomes, because outliers were removed. Specifically, we removed observations where the number of visits exceeded the 90th percentile of the distribution.

CG = comparison group; ER = emergency room; MAPCP = Multi-Payer Advanced Primary Care Practice; PBPM = per beneficiary per month; PCMH = patient-centered medical home.

\* Statistically significant at the 10 percent level.

Health information technology (health IT) infrastructure is an integral component of most states' PCMH demonstrations; in fact, it was the most common challenge that MAPCP Demonstration programs faced during Year Two. Unfortunately, many states had problems operationalizing their health IT plans. Thus, to improve their health IT, several states offered new services so that practices could more effectively access and share patient data. Vermont launched Vermont Information Technology Leaders (VITL) Access, a secure Web site that allows providers to query a range of clinical information from the Vermont Health Insurance Exchange. This represented an expansion of content that was available in their existing and troubled statewide clinical registry, DocSite. In North Carolina, a September 2013 integration of Pharmacy Home, a database of patient information on drug use, and the Case Management Information System (CMIS), Community Care of North Carolina's dedicated online Web portal for nurse care managers, allowed for more fluid coordination between nurse care manager and clinical pharmacist tasks around medication reconciliation. Pennsylvania improved the Chronic

Care Initiative's practice portal, administered by the Pennsylvania Academy of Family Physicians, resulting in a smoother data entry process and more timely feedback for practices.

In addition to offering new services, states focused many resources to find other solutions to health IT issues. Minnesota's Department of Health struggled with recruitment and retention of IT personnel. This slowed down the Health Care Homes recertification process, which relied on a state-maintained Web-accessible database. During our site visit and data collections, we did not hear about Minnesota's plans to overcome this issue. At the beginning of Year Two, Rhode Island still had low patient "opt-in" enrollment to CurrentCare, its health information exchange (HIE). This low patient enrollment limited the usefulness of CurrentCare for providers and led to low enrollment by providers. However, during Year Two, Lifespan, a major delivery system in the state, switched to an HIE that was compatible with CurrentCare. After, patient enrollment increased significantly. In Vermont the implementation of health IT encountered a variety of challenges during Year Two. The most significant was the inaccuracy of the data in the statewide clinical registry, DocSite. During Year Two, Vermont committed intensive efforts to resolve the problems with DocSite and to improve practices' ability to connect to and use the program in a meaningful way. These efforts included taking suggestions well and attempting to adapt the program to meet the needs of intended users. At the opening of Year Two, getting usable data to practices remained a challenge for the Maine PCMH Pilot. Data exchange through HealthInfoNet, the nonprofit organization operating Maine's HIE, was focused primarily on hospitals, not on primary care practices. MaineCare worked with HealthInfoNet to develop a portal that allowed providers to review their health home panels and to attest to the provision of health home services.

During Year Two, the role of care managers was also a common challenge in a few states (Michigan, Maine, and Pennsylvania). The major focus of Michigan's implementation efforts that year was to train care managers and integrate them into the practices—more than 400 were trained and in place by the end of June 2013. The Michigan Public Health Institute conducted a survey of care managers in May and June 2013 that examined both caseload and integration, among other topics (Tanner, 2013a). Although the training was a major project accomplishment, some challenges remained, including difficulties in integrating the care managers into some practices and lower-than-expected average caseloads for care managers. Thus, during Year Two, the Michigan Primary Care Transformation Project continued to work on these issues (integration and caseload) by tracking implementation and fostering the spread of promising practices among care managers. In Maine during Year Two, community care teams (CCTs) found that they needed more time than anticipated to staff up to capacity, develop relationships, and clearly define their roles with the new practices. In the summer of 2013, Quality Counts staff visited all 10 CCTs and 21 of the practices that the CCTs were working with to assess the CCTs' operations. From this assessment, they developed solutions to standardize and provide clear expectations for CCT services. During Year Two, Pennsylvania practices mentioned that one difficulty to transformation into and progress as a medical home was the lack of training and support for care managers. In general, Pennsylvania practices did not have integrated EHR software. Therefore, care managers did not have access to this type of software for identifying high-risk patients or care guidelines for managing them. Furthermore, they lacked clear guidelines about when the practice should manage a high-risk patient or when the health plan should assist with or take over a case. No solutions to these concerns were offered during our Year Two analysis.

Three states (Michigan, Minnesota, and New York) also faced billing or payment challenges during Year Two. During 2012, Michigan practices faced significant difficulties using G-codes to bill commercial payers for care management services. Michigan staff and Blue Cross Blue Shield of Michigan attempted to remedy this issue during Year Two by providing written billing guidelines for the codes as well as both group and individual training. They also generated reports showing the number of care coordination claims submitted and paid to help diagnose billing problems and target technical assistance resources. Stakeholders reported that these initiatives reduced the number of problems, although there were still some residual billing problems. In Year Two, many of Minnesota's Health Care Homes practices did not submit claims to receive monthly care coordination payments because they viewed the billing and its tiering as challenging and not worth the remuneration. In August 2013, Minnesota's Department of Human Services released a brief memo that outlined the initiative's billing issues, requested feedback on proposed solutions, and suggested the possibility of modifying the initiative's complex tiering structure or streamlining the claims submissions process (Minnesota Department of Human Services, 2013). In New York the pay-for-performance payments that were expected to be distributed at the beginning of 2013 were delayed until 2014 for multiple reasons, including a longer-than-expected time to agree on which measures should determine the payments and concerns about the quality and timeliness of the data that would be used to determine the distribution. Also, United HealthCare's Community Health Plan (a Medicaid managed care plan) did not join the Adirondack Medical Home Demonstration and begin making payments as expected on October 1, 2012, because contract issues caused delays. The plan was expected to begin payment distributions in 2014 and to make retroactive payments to reflect the entire performance period.

Through the implementation of their demonstrations, including the challenges, the states reported having learned valuable lessons. The most frequent lesson, mentioned by five states (New York, Vermont, North Carolina, Maine, and Pennsylvania), was that the demonstration was not long enough. New York observed that practice transformation is a long-term process and requires continual state and regional leadership support. Pennsylvania also noted the need for continued practice engagement in transformation activities. Thus, participating parties need to be in it for the long haul. Despite the fact that Vermont started with the Blueprint for Health in July 2008, Year Two of the MAPCP Demonstration was a formative year for practices' transformation as community networks continued to strengthen. North Carolina cautioned others considering a multi-payer PCMH initiative not to underestimate the time and resources needed to launch and administer a demonstration of this magnitude. Three years is not enough time to fully implement the initiative and show results; two North Carolina interviewees specifically stated that a 5-year timeline would have been more realistic than the MAPCP Demonstration's 3 years. Stakeholders across all states mentioned the need for time before seeing results and established expectations for not finding significant quantitative impacts on utilization and expenditures in Year Two or shortly thereafter. Thus, later quarterly state reports for the five continuing states may have more favorable results than the Final Report.

Other common lessons learned included the need for strong leadership (Maine and Pennsylvania), an evolving payment model (Minnesota and New York), a balanced approach to soliciting input from multiple types of stakeholders (Minnesota and Maine), and a

sustainability plan that considers future funding and the transformation of the delivery system (New York and Rhode Island).

Overall, Year Two of the MAPCP Demonstration found state initiatives still attempting to hit their stride. States were still implementing new components and encountering and finding solutions to new challenges. Thus, all states agreed that the benefits of the MAPCP Demonstration were not likely to be strongly visible at this time. Our quantitative analysis supported this contention by finding very few consistent, favorable changes associated with the MAPCP Demonstration across the eight states. At the end of Year Two, only three of the eight initiatives were associated with slower rates of growth of total Medicare expenditures, and only the Michigan initiative was budget neutral with statistically significant, nonnegative net savings. Outcomes of the demonstration's participants were not more consistent among special populations; only two states (Michigan and Vermont) experienced reduced growth in total expenditures for Medicare beneficiaries with multiple chronic conditions and beneficiaries with behavioral health conditions.

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