Research Report

Evaluation of CMS's Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration

Final Report

Katherine L. Kahn, Justin W. Timbie, Mark W. Friedberg, Peter Mendel, Liisa Hiatt, Emily K. Chen, Amii M. Kress, Christine Buttorff, Tara A. Lavelle, Beverly A. Weidmer, Harold D. Green, Mallika Kommareddi, Rosalie Malsberger, Aaron Kofner, Afshin Rastegar, Claude Messan Setodji

September 2016

RR-886/2-CMS

Prepared for the Centers for Medicare & Medicaid Services

For more information on this publication, visit www.rand.org/t/rr886z2

Published by the RAND Corporation, Santa Monica, Calif.

www.rand.org

Preface

RAND conducted an independent evaluation of the Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration for the Centers for Medicare and Medicaid (CMS). The evaluation studied the processes and challenges involved in transforming FQHCs into patient-centered medical homes (PCMHs) and assessed the effects of the FQHC APCP Demonstration model on access, quality, and cost of care provided to Medicare and Medicaid beneficiaries served by FQHCs.

The evaluation sought to answer three key policy questions:

- How does the demonstration affect practice structure and medical home recognition?
- Do demonstration sites deliver better beneficiary processes and outcomes than comparison sites?
- How does medical home recognition affect beneficiary processes and outcomes?

RAND used a mixed-methods approach to address these questions. This report presents the final results of RAND's analyses.

This is the last of three annual reports that RAND prepared during the course of the evaluation. The earlier reports are:

- Katherine L. Kahn, Justin W. Timbie, Mark W. Friedberg, Peter S. Hussey, Tara A. Lavelle, Peter Mendel, Liisa Hiatt, Beverly A. Weidmer, Aaron Kofner, Afshin Rastegar, J. Scott Ashwood, Ian Brantley, Denise D. Quigley, and Claude Messan Setodji, *Evaluation of CMS' FQHC APCP Demonstration: Final First Annual Report*, Santa Monica, Calif.: RAND Corporation, RR-886-CMS, 2015
- Katherine L. Kahn, Justin W. Timbie, Mark W. Friedberg, Tara A. Lavelle, Peter Mendel, J. Scott Ashwood, Liisa Hiatt, Ian Brantley, Beverly A. Weidmer, Afshin Rastegar, Aaron Kofner, Rosalie Malsberger, Mallika Kommareddi, Denise D. Quigley, and Claude Messan Setodji, *Evaluation of CMS's Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration: Final Second Annual Report*, Santa Monica, Calif.: RAND Corporation, RR-886/1-CMS, 2015.

This work was sponsored by CMS under contract No. HHSM–500–2005–00028I and task order number T0008, for which Katherine Giuriceo served as the contracting officer's representative. The research was conducted in RAND Health, a division of the RAND Corporation.

Contents

Exhibits

Executive Summary

On November 1, 2011, on behalf of the U.S. Department of Health and Human Services, the Centers for Medicare & Medicaid Services (CMS) initiated the three-year Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration, which was intended to support the transformation of FQHCs into APCPs, also known as patient-centered medical homes (PCMHs). PCMHs are physician- or nurse practitioner–directed medical practices that provide continuous, comprehensive, coordinated, and patient-centered medical care. The goal of the demonstration was to use principles of the PCMH model to improve patient health and quality of care for Medicare beneficiaries served by FQHCs while also lowering the cost of care.

The FQHC APCP Demonstration was designed to support participating FQHCs in achieving Level 3 PCMH recognition from the National Committee for Quality Assurance (NCQA). Recognition at that level is based on NCQA's 2011 scoring of six standards: enhancing access and continuity, identifying and managing patient populations, planning and managing care, providing self-care support and community resources, tracking and coordinating care, and measuring and improving performance. CMS expected that at least 90 percent of participating FQHCs would achieve NCQA Level 3 PCMH recognition by the time the demonstration concluded in October 2014.

The demonstration provided four intervention components for the 503 demonstration participants to support the achievement of NCQA Level 3 PCMH recognition:[1]

- CMS provided participating FQHCs with a quarterly care management fee payment of $18 for each eligible Medicare beneficiary.
- The NCQA offered technical assistance (TA) to help participating FQHCs prepare documentation for NCQA Level 3 PCMH recognition. Through an extensive learning system involving the Health Resources and Services Administration (HRSA), the American Institutes for Research (AIR), and primary care associations (PCAs), FQHCs received training and assistance to support and guide them in their transformation across all six NCQA standards.
- AIR, the regional PCAs, and Qualis Health (Qualis) assisted the FQHCs with the preparation and completion of the biannual Readiness Assessment Surveys (RASs). AIR provided office hours, conducted webinars, and distributed newsletters that provided information that highlighted expectations, deadlines, successes and challenges. The PCAs

[1] There were no more than 500 FQHCs at any given time in the demonstration. Three of the initial 500 sites were deemed ineligible and were immediately replaced.

provided one-on-one assistance and monitored the progress of FQHCs in their region. Qualis provided intensive review of and feedback on RAS submissions.

- Participating FQHCs periodically received data and performance from three different feedback reports. First, the biannual NCQA RAS report provided FQHCs with site-level NCQA PCMH recognition level and overall score trends. Second, quarterly cost and utilization data reports provided site-level claims-based utilization measures (e.g., inpatient admission, emergency department [ED] visits), Medicare expenditure summary data (e.g., average total Medicare expenditure per beneficiary), and quality of care measures (e.g., glycated hemoglobin blood [HbA1c] testing, retinal eye exams, low-density lipoprotein [LDL] screening, and nephropathy testing rates among beneficiaries with diabetes). Third, a quarterly claims–based beneficiary-level report provided identifiable beneficiary data regarding key study outcomes (e.g., cost, utilization, and health) for all beneficiaries attributed to the FQHC.

To determine whether the demonstration's goals were met, CMS awarded a contract to the RAND Corporation to conduct an independent evaluation of the FQHC APCP Demonstration.

Overview of the Evaluation

In our evaluation of the FQHC APCP Demonstration, we sought answers to three key policy questions:

- How does the demonstration affect practice structure and medical home recognition?
- Do demonstration sites deliver better beneficiary processes and outcomes than comparison sites?
- How does medical home recognition affect beneficiary processes and outcomes?

To answer these questions, we adopted a rigorous analytic method using both qualitative and quantitative approaches. Where possible, we sought to compare demonstration sites receiving the CMS-directed resources listed above to comparison sites without access to these resources. We also compared outcomes for beneficiaries attributed to FQHCs that did and did not achieve NCQA Level 3 PCMH recognition.

Exhibit S.1 summarizes the evaluation's findings for each of the three questions. The remainder of the executive summary adds detail to these basic findings.

Exhibit S.1. Summary of Evaluation Findings

1. How does the demonstration affect practice structure and medical home recognition?

- Seventy percent of demonstration sites achieved NCQA Level 3 PCMH recognition by the end of the demonstration, compared with only 11 percent of comparison sites. Although the demonstration's goal of 90 percent was not achieved, the 70-percent recognition rate can be considered a success and attests to the determination of demonstration sites to become PCMHs.
- TA was not well coordinated until the demonstration's second year, which may have left some sites uncertain early on about the resources available to assist in achieving PCMH recognition and may have delayed their adoption of medical home change processes.
- A key challenge to attaining recognition arose from the demonstration's focus on Medicare beneficiaries who receive most of their care at FQHCs. Since this target population represents a relatively small proportion of the patients seen at a typical FQHC, the care management fee payments were relatively small in relation to the costs of preparing for and achieving recognition across the entire FQHC.
- Because most sites that achieved recognition did so toward the very end (Quarter 12) of the demonstration, many sites did not have much time as a fully functioning PCMH in which to improve beneficiary processes and outcomes.
- Achieving PCMH recognition, though critical, did not represent the end of a site's transformation into a medical home. Demonstration site respondents described a number of specific PCMH practices (e.g., team-based care, tracking and coordinating specialist and lab/diagnostic services) they believed required additional transformation work for sites to be considered fully functioning PCMHs.

2. Do demonstration sites deliver better beneficiary processes and outcomes than comparison sites?

- The evaluation found a limited demonstration effect on beneficiary outcomes (utilization, process, spending, and beneficiary experience).
- We identified three reasons for these small effects. First, the exposure of comparison sites to TA resources similar to those available to demonstration sites reduced observable differences between demonstration and comparison sites, thus decreasing the chance of detecting differences in beneficiary outcomes.
- Second, by the end of the demonstration, both demonstration and comparison FQHCs included a mixture of sites that had achieved NCQA Level 3 recognition and sites that had not, which might have attenuated any observed demonstration effect.
- Third, most sites that achieved NCQA Level 3 recognition did so toward the very end of the three-year demonstration. Hence, for many sites, beneficiary outcomes observed during the third year of the demonstration reflect outcomes that precede rather than follow medical home recognition. Our analyses found that while achieving medical home recognition did affect beneficiary outcomes for demonstration sites, other factors, such as participation in other quality improvement (Q) and quality assurance (QA) initiatives, also influenced beneficiary processes and outcomes

3. How does medical home recognition affect beneficiary processes and outcomes?

- A series of medical home effect analyses indicated that, over time, beneficiaries attributed to NCQA Level 3-recognized FQHCs (including beneficiaries attributed to both demonstration and comparison sites) had significantly better utilization, process, and spending outcomes than did beneficiaries attributed to other FQHCs.
- Beneficiary experience outcomes were mixed, with positive and negative changes noted, relative to sites without medical home recognition.

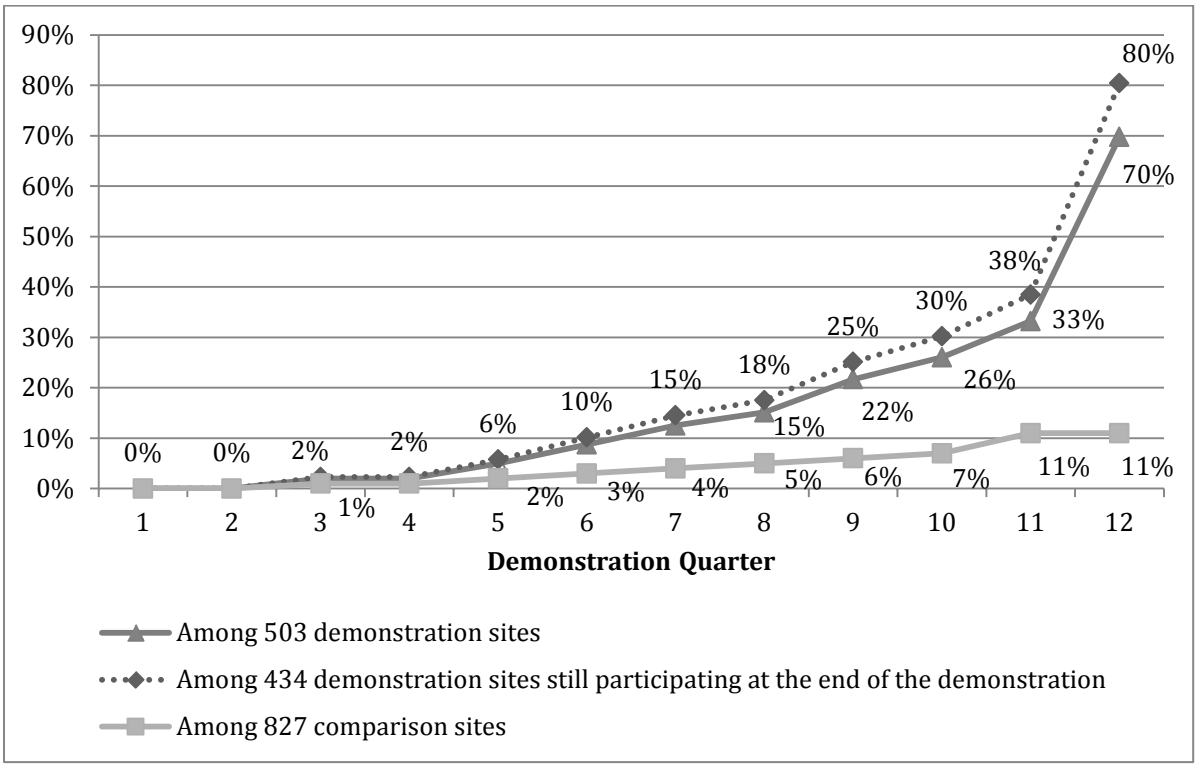
Key Policy Question 1: How Does the Demonstration Affect Practice Structure and Medical Home Recognition?

A majority of demonstration sites were successful in achieving NCQA Level 3 PCMH recognition. Overall, 70 percent (n=351) of 503 participating demonstration sites[2] achieved NCQA Level 3 PCMH recognition by the end of the demonstration;[3] more than half of the sites that reached this milestone did so in Quarter 12 (see Exhibit S.2). This percentage is lower than CMS's goal of 90 percent; however, only 11 percent of comparison sites achieved NCQA Level 3 recognition. In qualitative analyses, we found strong evidence that demonstration sites were more focused than comparison sites on achieving NCQA Level 3 PCMH recognition within the three-year timeframe set by CMS. In addition to the results shown here, we note that some FQHCs in both the demonstration and comparison groups attained PCMH recognition through other available programs, including the Joint Commission, the Accreditation Association for Ambulatory Health Care (AAAHC), and state programs.

[2] There were no more than 500 demonstration FQHCs at any given time. However, 503 different FQHCs were involved over the course of the demonstration. One site was deemed ineligible in the second week of the demonstration, and two more were deemed ineligible in the seventh month of the demonstration. One replacement site was added in the second month and two more were added in the ninth month of the demonstration. When additional sites dropped out or became ineligible, CMS decided not to replace them.

[3] When discussing demonstration outcomes, the CMS implementation team counts only the 434 sites that completed the demonstration. If 434 is used as the denominator, 80 percent of sites remaining at the end of the demonstration achieved NCQA Level 3 PCMH recognition. The evaluation team uses an intention-to-treat analysis that focuses on the proportion of the initially identified demonstration FQHCs that achieve recognition. In Exhibit S.2, we report results based on both assumptions since different readers will be interested in different questions concerning the proportion of FQHCs that achieved medical home recognition.

Exhibit S.2. Proportion of Demonstration and Comparison FQHCs That Achieved NCQA Level 3 PCMH Recognition by Demonstration Quarter



SOURCE: NCQA, 2014a (compiled by Truven Analytics) for demonstration sites (n=503); HRSA, 2014, for comparison sites approaching the end of the demonstration's 12th quarter.

FQHC Utilization of Demonstration Funding and Other Financial Resources

Demonstration sites received an average of approximately $6,500 in demonstration care management fee payments each quarter for the duration of the demonstration. Typical uses of these per-beneficiary-per-quarter (PBPQ) fee payments, as reported in site leader interviews, are shown in the first row of Exhibit S.3. In general, demonstration site respondents valued the care management fee payments, but considered the amount of funding provided by the demonstration to be relatively modest. Demonstration FQHCs reported several additional sources of PCMH funding external to the demonstration, which are shown in the second through fifth rows of Exhibit S.3. Of these sources, HRSA's contribution was most significant.

Comparison sites also had access to various sources of funding to support PCMH transformation. Financial supports available to demonstration and comparison sites are shown in Exhibit S.3.

Exhibit S.3. PCMH Financial Supports

Support Interventions	Demonstration FQHCs	Comparison Sites
PBPQ care management fee payments	• Received by all demonstration sites • Typical reported uses included: - New and expanded care team roles - Education and training on PCMH changes and new care practices - General support for PCMH lead/ coordinator, implementation team - Additional clinical staff for extended hours - Electronic health record (EHR) modifications and information technology support for PCMH	• Not available to comparison sites
HRSA	• Most substantial nondemonstration funding source • Various grants to cover PCMH recognition fees, expanded access and staffing, facility improvements, care management for specific diseases, and increases in annual base grants	• Most widely acknowledged source of PCMH funding for comparison sites • Similar sets of grants reported
State Medicaid programs	• Only reported by sites in one (out of six) state in the qualitative sample • Per-member-per-month rate similar to that provided by PBPQ care management fees, but more substantial due to higher number of Medicaid patients	• Same as demonstration sites
Private managed care organizations and insurers	• Variety of PCMH-related programs • Impose different sets of requirements, but provide relatively little additional funding	• Same as demonstration sites
Miscellaneous funding sources	• Medicare accountable care organizations reported by two sites (not PCMH-related per se, but similar goals and strategies)	• Variety of local funding (university grant, county health fund), but no reason to indicate these sources not accessible to demonstration sites if available

SOURCE: RAND analyses of site leader and PCA leader interviews.

FQHC Utilization of Technical Assistance and Feedback Reports

The intervention included TA provided by NCQA, AIR (including state PCAs), and Qualis, as well as feedback reports on clinic RAS scores, Medicare beneficiary utilization and costs, and beneficiary level data for care management purposes. Demonstration sites also had access to additional nondemonstration TA (at a cost).

Demonstration site respondents reported that TA was valuable in helping them chart a course of change, coordinate their PCMH transformation efforts, and support the educational process involved in PCMH transformation. Respondents cited several especially valuable forms of TA, including NCQA responses to individual site inquiries, AIR webinars about particular PCMH

components and documentation, PCA practice coaches, and Qualis's expertise on PCMH implementation and NCQA recognition requirements.

Although demonstration sites benefited from various forms of TA, site personnel indicated that TA was not well coordinated for the first 18 months of the demonstration; however, coordination improved over time, with better communication and streamlining of national TA partners in the demonstration. The multiplicity of demonstration TA resources was initially confusing to many sites and, partially as a result, some sites did not make full use of TA until later in the demonstration. The delay in coordinating TA resources may have affected sites' ability to achieve NCQA Level 3 PCMH recognition within the demonstration timeframe, which could, in turn, have affected sites' ability to improve patient outcomes within the demonstration timeframe.

Site-level analyses showed that use of feedback reports started slowly but increased substantially over time. By the end of the demonstration, uptake—measured in terms of sites accessing at least one report at least one time during the demonstration—increased from 15 percent in Quarter 6 (when feedback reports first became available) to 86 percent in Quarter 12 when the demonstration finished.

Demonstration Effect on Medical Home Recognition

In quantitative analyses,[4] we found that access to external funding and strong EHR systems at baseline were associated with achieving NCQA Level 3 recognition. Analyses of both demonstration and comparison sites revealed that FQHCs that were Affordable Care Act (ACA) grantees, participated in a HRSA PCMH Initiative, or received PCMH supplemental funding were significantly more likely to achieve NCQA Level 3 PCMH recognition.[5] Taking advantage of TA (attending five or more AIR webinars, attending five or more AIR office hours) and feedback reports (viewing five or more feedback reports) was also statistically significantly associated with achieving NCQA Level 3 PCMH recognition.

[4] The regression analyses predicted achievement of NCQA Level 3 PCMH recognition after adjusting for the following confounders: structural characteristics, beneficiary characteristics, PCA region, and percentage of household poverty in the census tract in which the FQHC operates.

[5] Being an ACA grantee indicates FQHC receipt of ACA Building Capacity, New Access Point, and/or Immediate Facility Improvement grant funding. Being a HRSA PCMH Initiative participant indicates that the FQHC filed a notice of intent to participate in the HRSA PCMH/Health Home Initiative as of January 2013. The program covers the cost of applying for recognition. Receiving PCMH supplemental funding is an indicator of whether the site's grantee received a one-time-only grant of $35,000 to facilitate PCMH transformation in fiscal year 2011.

Pathways to PCMH Adoption and Recognition: Motivation, Progression, and Key Influences

To complement the quantitative analyses and to better convey sites' experience as they moved toward PCMH recognition, we examined the pathways to recognition among the 20 demonstration and ten comparison sites in our qualitative interview sample. Site respondents described several reasons for participating in the demonstration, with most demonstration respondents mentioning at least two. In order of frequency mentioned, these reasons included:

- national movement in primary care toward PCMH both as a care model and for reimbursement
- opportunity to obtain NCQA recognition
- opportunity for QI and practice transformation
- enhanced care management fee payments
- access to demonstration TA
- implementation structure and accountability
- site orientation toward early adoption.

Analysis of site structural characteristics (e.g., PCMH practice readiness, cultural readiness) and change process factors within our qualitative sample identified the following key features of pathways to attaining medical home recognition.[6]

- High PCMH leader capacity for managing practice change was a common factor among all demonstration sites in the qualitative sample that achieved NCQA Level 3 PCMH recognition by the end of the demonstration.
- Previous low QI or NCQA experience was a common factor among all demonstration sites in the qualitative sample that did not achieve NCQA Level 3 PCMH recognition.

Sites lacking in both PCMH practice readiness and cultural readiness were less likely to achieve NCQA Level 3 PCMH recognition.

To achieve NCQA Level 3 recognition, sites starting with lower baseline medical homeness RAS scores required strong leadership support, stable change teams, and a well-developed ability to function as a "change agent," with either a baseline functional EHR system or high use of external PCMH supports. Strength in these areas was sometimes sufficient to allow sites to overcome deficits in their preparation and to succeed in attaining recognition. Sites that started at

[6] PCMH practice readiness includes factors for EHR functionality and the "medical homeness" of care processes at baseline of the demonstration as assessed through the qualitative interviews; cultural readiness factors include leadership support for PCMH change, staff support, and prior QI and medical home experience; change process factors include the capacity for managing change of the individual leading the PCMH effort, the stability and cohesiveness of the PCMH change team, and uptake of PCMH TA and financial supports.

higher levels of medical homeness and attained NCQA Level 3 recognition tended to be strong in multiple areas of readiness, whether or not they utilized external PCMH supports.

Change Management: Challenges and Facilitators

The process of pursuing and achieving NCQA Level 3 PCMH recognition required extensive changes by FQHCs. Sites reported implementing a variety of specific practice changes to support their PCMH transformation. Exhibit S.4 shows reported practice changes according to the six NCQA 2011 standards.

Exhibit S.4. Specific PCMH Practice Changes Emphasized in Demonstration Site Interviews, Grouped by Relevant NCQA 2011 Standard

NCQA 2011 Standards	Specific Practice Changes Emphasized in Site Interviews
Enhance access and continuity	• Care team and other staffing changes, including teamwork procedures (e.g., huddles) and integration of other types of staff (e.g., care managers, patient educators, behavioral health) in "expanded" care teams • Empanelment (the process of assigning individual patients to primary care providers and care teams to improve continuity) • Open access (e.g., extended hours, same-day appointments) • Linguistic/cultural access • Patient web portal and other remote access • Ensuring access to specialty care[a]
Identify and manage patient populations	• Population management (e.g., collecting demographic and clinical data, creating registries for patients with specific conditions, identifying patient risk factors)
Plan and manage care	• Previsit planning • Care plan development, including involving patients and caregivers
Provide self-care support and community resources	• Self-management support • Linking (patients/caregivers to community resources for self-care, social, or other nonmedical needs
Track and coordinate care	• Tracking, following up on, and coordinating referrals and care with: - Hospitals, including following up with patients after discharge - Specialists - Laboratory, imaging, and other diagnostic tests
Measure and improve performance	• Monitoring and using performance, outcome, and patient experience data for continuous improvement • Consistent documenting of care[a]

SOURCE: NCQA, 2012, and RAND site leader interviews.
[a] This PCMH practice change is not included as a stated element of the NCQA standard, but was emphasized by site respondents.

The most commonly mentioned change facilitators reported by demonstration sites were support from FQHC executive leaders; provider and staff buy-in, including champions of change; and education and training of providers and staff. EHR systems and team-based care were identified as foundational components of other PCMH-related changes.

Sites sometimes struggled to adapt to new models of care and faced challenges related to establishing workflows, implementing same-day appointments, implementing a patient portal, and increasing access to specialty care. Respondents also reported challenges related to care plans and difficulty in "pulling" necessary data from the EHR into usable formats. Sites improved patient self-management support through education, goal-tracking, and follow-up documented in the EHR. Sites also implemented changes to improve tracking and coordination of care and to expand quality measurement systems and QI practices.

Site leaders also noted specific challenges related to the NCQA recognition process itself. A key challenge was the time-consuming nature of the application process, which at times was considered to detract from implementing practice changes. The diversity of care delivered by many FQHCs (e.g., adult primary care, behavioral health, pediatrics) also posed a challenge to reaching consensus on site-wide policies. Sites often needed to create processes and policies and adapt EHR systems to capture care practices and generate documentation for NCQA application.

Provider and Staff Experiences

To understand the effects of practice changes during the demonstration, we conducted a Clinician and Staff Experience (CASE) survey among clinicians and staff in demonstration sites. Survey findings suggest that, during the period of the demonstration, participating practices experienced significant stress that manifested itself in worsening survey results on multiple dimensions of practice culture and on multiple dimensions of professional satisfaction.

The findings from the CASE survey suggest that, during the period of the demonstration, participating practices experienced significant stress that manifested in worsening survey results on multiple dimensions of practice culture and on multiple dimensions of professional satisfaction. Clinicians and staff reported significantly worsening of results on multiple measures of clinic culture and teamwork, including adaptive reserve; communication openness and organizational learning; and team structure, situation monitoring, and mutual support.[7] For most of these measures, the degree of worsening was significantly greater among sites with high baseline RAS scores than among sites with lower baseline RAS scores. Comparing results of the early and late CASE surveys, we also found that clinicians and staff of demonstration FQHCs reported significant reductions in overall professional satisfaction and corresponding increases in stress, burnout, chaos, and likelihood of leaving their practices.

These findings suggest that sites with high levels of medical home structures and processes at baseline were *less* able to withstand any additional stress associated with participation in the FQHC APCP Demonstration than were sites with comparatively fewer medical home attributes

[7] Adaptive reserve refers to an organization's capacity for change, including infrastructure strategies to facilitate relationship building, facilitative leadership to support collaboration, and "sensemaking" to help individuals give meaning to their experiences, teamwork, a culture of learning, and work environment.

at baseline. That is, having medical home structures at baseline might itself have been stressful, eroding sites' capacity to withstand further stress.

The CASE survey responses are consistent with interviews, which indicated that PCMH recognition made additional demands on providers' time (e.g., the additional time needed to expand patient access, huddle, and develop and document specific care plans). Providers and staff also expressed concern about not having enough time to spend with FQHC patients, many of whom might have complex needs. Respondents noted that the added pressures to achieve PCMH recognition could lead to provider burnout.

Key Policy Question 2: Do Demonstration Sites Deliver Better Beneficiary Processes and Outcomes Than Comparison Sites?

We examined claims and survey data to understand how the demonstration affected patient outcomes and experience. We found a limited number of demonstration effects on beneficiary outcomes, which are defined as utilization, process, spending, and beneficiary experience (Exhibit S.5).

Effects on Beneficiaries: Demonstration and Comparison Sites

We compared changes over time in utilization, processes, spending, and beneficiary experiences among beneficiaries attributed to demonstration contrasted with comparison FQHCs. Selected results are shown in Exhibit S.5. Overall, we did not observe the expected reductions in utilization, processes, costs, or beneficiary experience.

- Beneficiaries attributed to demonstration sites had significantly higher rates of visits to FQHCs, after controlling for baseline differences—a difference that more than doubled by the end of the demonstration (105 more visits per 1,000 beneficiaries). They also had higher rates of visits to primary care physicians, regardless of whether the visit occurred at the FQHC or elsewhere.
- Demonstration sites showed a steady upward trend in ED visits at demonstration sites, compared with changes in comparison sites, during the three years of the demonstration.
- We found some improvement for diabetes care (i.e., surveillance tests recommended for patients with diabetes) among demonstration sites relative to comparison sites.
- Demonstration sites were associated with significant increases in total Medicare expenditures during Year 3 relative to comparison sites and cumulatively when care management fee payments were excluded from the analysis ($p<0.1$). When the fees were included, total Medicare expenditures were significantly higher in demonstration sites ($p<0.05$).
- Analyses of findings from the beneficiary surveys identified few significant differences in outcomes for demonstration and comparison FQHC patients. In some areas (e.g., getting appointments as soon as possible for care needed right away, receiving smoking

cessation recommendations), demonstration beneficiaries experienced better relative performance. In other areas (e.g., receiving easy-to-understand information and explanations about health questions or concerns), they experienced worse relative performance.

Exhibit S.5. Year-by-Year and Cumulative Demonstration Effect on Utilization and Spending Outcome Measures

	Year-by-Year Difference-in-Differences Demonstration Effect						Cumulative Difference-in-Differences Demonstration Effect	
	Year 1		Year 2		Year 3		Years 1, 2, and 3 Combined	
Outcome Measures[a]	Estimate	95% Confidence Interval (CI)	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Aggregate results for all demonstration beneficiaries								
FQHC visits (per year)	**7,331*** **	**3,453, 11,208**	**19,167*** **	**14,131, 24,203**	**24,260*** **	**19,050, 29,469**	**47,461*** **	**36,227, 58,694**
Non-FQHC primary care visits (per year)	–1,223	–4,850, 2,404	–2,267	–7,676, 3,141	3,171	–3,186, 9,528	3,238	–10,261, 16,735
Total primary care visits (per year)	**5,770***	**963, 10,578**	**12,426*** **	**5,843, 19,010**	**18,151*** **	**10,805, 25,498**	**38,770*** **	**24,360, 53,175**
Specialist visits (per year)	1,579	–2,724, 5,882	–1,149	–7,384, 5,085	–815	–7,844, 6,213	131	–14,312, 14,571
Total ED visits (per year)	**3,465** **	**836, 6,093**	**5,148** **	**1,828, 8,469**	**7,238*** **	**3,510, 10,966**	**17,421*** **	**9,507, 25,339**
Inpatient admissions (per year)	690	–382, 1,761	**1,348***	**103, 2,592**	628	–787, 2,042	**3,294***	**449, 6,140**
Inpatient ACSC admissions (per year)	155	–193, 504	167	–272, 606	–259	–777, 258	166	–840, 1,168
Inpatient readmissions (percentage points)	2,388	–35,724, 40,499	–34,379	–77,777, 9,020	–20,453	–62,311, 21,405	–50,443	–144,862, 43,976
All four recommended diabetes tests (percentage points)	**44,175*** **	**19,246, 69,105**	8,749	–20,713, 38,211	18,985	–10,776, 48,746	**85,646***	**20,342, 150,950**
Total Medicare expenditures without care management fee payments (in millions, per year)	5.28	–24.41, 34.98	14.89	–20.12, 49.90	**37.56**[†]	**–2.88, 77.99**	**72.71**	**–7.45, 152.88**
Total Medicare expenditures with care management fee payments (in millions, per year)	15.91	–13.78, 45.62	29.09	–5.92, 64.10	**54.16** **	**13.73, 94.60**	**114.15** **	**33.98, 194.31**
Inpatient expenditures (in millions, per year)	–4.65	–25.78, 16.49	15.87	–6.48, 38.22	17.89	–6.30, 42.07	28.52	–21.20, 78.24
Part B expenditures (in millions, per year)	–0.40	–8.13, 7.33	4.63	–3.49, 12.75	**14.27*** **	**6.08, 22.45**	**21.11***	**3.63, 38.59**

	Year-by-Year Difference-in-Differences Demonstration Effect						Cumulative Difference-in-Differences Demonstration Effect	
	Year 1		Year 2		Year 3		Years 1, 2, and 3 Combined	
Outcome Measures[a]	Estimate	95% Confidence Interval (CI)	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Per beneficiary results								
FQHC visits (per 1,000 beneficiaries per year)	**49.66*** **	**23.39, 75.93**	**97.17*** **	**71.64, 122.70**	**105.19*** **	**82.61, 127.78**	**82.47*** **	**62.95, 101.99**
Non-FQHC primary care visits (per 1,000 beneficiaries per year)	–8.28	–32.85, 16.29	–11.49	–38.91, 15.93	13.75	–13.82, 41.31	5.63	–17.83, 29.08
Total primary care physician visits (per 1,000 beneficiaries per year)	**39.09***	**6.52, 71.65**	**63.00*** **	**29.62, 96.38**	**78.71*** **	**46.85, 110.56**	**67.37*** **	**42.33, 92.40**
Specialist visits (per 1,000 beneficiaries per year)	10.70	–18.45, 39.85	–5.83	–37.44, 25.78	–3.54	–34.01, 26.94	0.23	–24.87, 25.32
Total ED visits (per 1,000 beneficiaries per year)	**23.47** **	**5.66, 41.28**	**26.10** **	**9.27, 0.94**	**31.38*** **	**15.22, 47.55**	**30.27*** **	**16.52, 44.03**
Inpatient admissions (per 1,000 beneficiaries per year)	4.67	–2.59, 11.93	**6.83***	**0.52, 13.14**	2.72	–3.41, 8.86	**5.72***	**0.78, 10.67**
Inpatient ACSC admissions (per 1,000 beneficiaries per year)	1.05	–1.31, 3.41	0.85	–1.38, 3.07	–1.12	-3.37, 1.12	0.29	–1.46, 2.03
Inpatient readmissions (percentage points)	0.06	–0.95, 1.07	–0.76	–1.71, 0.20	–0.44	–1.35, 0.46	–0.39	–1.12, 0.34
All four recommended diabetes tests (percentage points)	**1.39*** **	**0.60, 2.17**	0.22	–0.53, 0.97	0.45	–0.26, 1.16	**0.76***	**0.18, 1.33**
Total Medicare expenditures without care management fee payments (per beneficiary per year)	35.78	–165.36, 236.92	75.49	–101.99, 252.98	**162.86†**	**–12.48, 338.20**	**126.35†**	**–12.95, 265.65**
Total Medicare expenditures with care management fee payments (per beneficiary per year)	107.78	–93.36, 308.92	147.49	–29.99, 324.97	**234.86** **	**59.52, 410.20**	**198.35** **	**59.05, 337.65**
Inpatient expenditures (per beneficiary per year)	–31.48	–174.64, 111.67	80.44	–32.87, 193.75	77.56	–27.32, 182.44	49.56	–36.84, 135.96
Part B expenditures (per beneficiary per year)	–2.70	–55.06, 49.65	23.49	–17.68, 64.66	**61.87*** **	**26.38, 97.36**	**36.68***	**6.30, 67.06**

SOURCE: RAND analysis of CMS TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
NOTE: The year-by-year demonstration effect represents the change in outcomes in each year of the demonstration relative to the baseline year among demonstration sites relative to the change in outcomes for comparison sites.

Cumulative difference-in-differences estimates are analyzed by pooling beneficiary-level yearly outcome measurements over multiple years of the demonstration period. Up to three years of annual outcomes are analyzed together, independent of the chronological order of each yearly measurement. For example, each year-three cumulative effect estimate uses outcomes from year 1, year 2, and year 3 of the demonstration period, that are analyzed as if they occurred during the same time period. Results that aggregate utilization and spending outcomes across all beneficiaries participating in the demonstration are included in the top panel, whereas per-beneficiary outcomes are presented in the bottom panel.

[a] FQHC visits included any visit to an FQHC regardless of provider specialty. Total PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Total specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to specialists at primary care clinics are identified by evaluation and management visit codes. Inpatient readmissions are measured as 30-day hospital-wide unplanned readmissions. Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission, and observation stays. All four recommended diabetes tests include HbA1c, LDL, eye exams, and nephropathy tests; these are measured as percentage points.

We believe the demonstration effects were small for multiple reasons. First, our analyses documented that comparison sites had access to external funding and TA opportunities to become a medical home. The exposure of comparison sites to opportunities to become a medical home decreased observable differences between demonstration and comparison sites, reducing the chance that we might detect significant demonstration effects on beneficiary outcomes.

Second, by the end of the demonstration, both demonstration and comparison FQHCs included a mixture of sites that had achieved NCQA Level 3 recognition and sites that had not. Hence, analyses of outcomes for beneficiaries attributed to demonstration sites relative to comparison sites necessarily included outcomes for a mixture of beneficiaries attributed to FQHCs that achieved recognition as well as beneficiaries attributed to FQHCs that did not achieve recognition. This blending of outcomes may have attenuated any observed demonstration effect.

Third, as shown in Exhibit S.2, most sites that achieved NCQA Level 3 recognition did so toward the very end of the three-year demonstration. Qualitative analyses emphasize that recognition is only one step in a long process of transformation that will impact beneficiary outcomes. Some sites purposively delayed their application to achieve recognition until the end of the demonstration, but many sites first initiated effective steps to achieve recognition and to move toward patient-centered care late in the demonstration. Hence, for many sites, beneficiary outcomes observed during the third year of the demonstration reflect outcomes that precede rather than follow medical home recognition.

With more than half of the sites that reached NCQA Level 3 PCMH recognition doing so within the final quarter of the demonstration, final beneficiary outcomes reflect a time during which sites were allocating substantial resources to achieving recognition. Although PCMH recognition is intended to stimulate practice transformation, qualitative analyses of interviews with site leaders and TA providers noted that the documentation requirements involved in obtaining recognition had the unintended consequence of detracting from practice transformation and process improvement, particularly near recognition deadlines.

Weighing Medical Home Recognition Effects on Outcomes

In the previous section, we showed that the demonstration had only a limited number of effects on beneficiary utilization, process, spending, and patient experience. The evaluation team considered why we had not observed the demonstration effects that we had expected to see. One possibility was that the effects of medical home recognition were “hidden” due to other factors associated with being part of the demonstration or with being a medical home. In other words, we considered the possibility that FQHCs were engaged in other activities that diminished, or in some cases canceled out, the positive effects of achieving medical home recognition on beneficiary outcomes.

To understand these issues better, we conducted a set of analyses to determine whether achieving NCQA Level 3 PCMH recognition had an effect on beneficiary outcomes among demonstration sites. These analyses are different from the demonstration effect analyses just presented in an important way. While the analyses just described sought to answer the question, "What is the effect of participating in the demonstration on beneficiary processes and outcomes?" the analyses presented below asked, "What is the effect of achieving NCQA Level 3 PCMH recognition on beneficiary outcomes among sites participating in the demonstration?"

We conducted the latter analyses using an approach known as "mediation analysis." Mediation analysis examines the role of medical home recognition as a mediator of the demonstration difference-in-differences analysis (which compared changes in beneficiaries attributed to demonstration sites to changes in beneficiaries attributed to comparison sites). This approach allowed us to recognize significant effects of the demonstration on beneficiary outcomes obtained through medical home recognition, but also to recognize the significant direct effect of the demonstration resulting from change in *other factors*. These direct factors might affect beneficiary outcomes in the same direction as do medical home–mediated effects, or alternatively, they could impact beneficiary outcomes in the opposite direction. When the two effects are discordant, the total mediated effect can approach zero even if the medical home–mediated effect is significant.

We found that achieving NCQA Level 3 PCMH recognition affected some beneficiary outcomes. While the magnitude of the effect varied across measures, results from utilization, process, spending, and beneficiary experience measures suggest that NCQA Level 3 PCMH recognition was a meaningful pathway through which the demonstration affected beneficiary outcomes. Among the seven utilization measures examined, we found statistically significant mediation effects for PCMH recognition on FQHC visits and non-FQHC primary care visits. For three of the four diabetes process measures we examined (in addition to a composite measure), we observed that most of the improvement in performance exhibited by demonstration sites was attributable to achievement of NCQA Level 3 PCMH recognition. We observed statistically significant impacts of the demonstration on Medicare expenditures when comparing changes over time among beneficiaries attributed to demonstration FQHCs that achieved NCQA Level 3 PCMH recognition to changes over time among beneficiaries attributed to sites that did not achieve NCQA Level 3 PCMH recognition.

However, our mediation analysis shows that in some cases, the effects of achieving NCQA Level 3 recognition on patient outcomes were muted, in terms of the overall impact of the demonstration, by the competing effects of other factors associated with demonstration sites. Our spending analyses provide an example of how such influences might work. For example, on average, NCQA Level 3 PCMH recognition was associated with a $139 decrease in spending among demonstration sites relative to comparison sites. However, other factors associated with demonstration were independently associated with an increase of $224 per beneficiary. Thus, the total demonstration effect was a nonsignificant increase in spending of $85. We saw limited

evidence of a significant effect of a demonstration site's attainment of NCQA Level 3 PCMH recognition on beneficiary experiences, specifically in regard to receiving information from their FQHCs about how to access care in a timely manner, providers supporting patients in taking care of their own health, providers giving patients follow-up on test results, and providers discussing the cost of seeing a specialist with the beneficiary.

Our qualitative analyses suggest that one important "other factor" may be the engagement of both demonstration and comparison FQHCs in other ongoing national health policy priorities, including improving technological abilities through EHRs, decision support, and registries; learning about new payment models, such as shared savings models; and implementing new state-based Medicaid programs—all of which can be associated with increased costs. While both demonstration and comparison FQHCs engaged in these activities, the commitment of demonstration FQHCs to achieve Level 3 recognition within the three-year FQHC APCP Demonstration period—while also engaging in these other national health priorities—may have weakened the effect of demonstration FQHCs on beneficiary outcomes.

The results of the mediation analyses indicated that, while achieving medical home recognition via the demonstration did affect beneficiary outcomes, other patterns of change that the clinic undergoes could have different, sometimes opposite, effects. These other mediating effects contributed to the limited observed demonstration effects.

Key Policy Question 3: How Does Medical Home Recognition Affect Beneficiary Processes and Outcomes?

While the mediation analyses showed that achieving NCQA Level 3 PCMH recognition was associated with some positive demonstration effects on beneficiaries attributed to demonstration FQHCs, we wanted to better understand the "medical home effect" apart from the "demonstration effect." To examine the effect of medical home recognition on patient outcomes, we conducted a series of medical home effect analyses, which examined whether achieving medical home recognition was associated with improved outcomes. We conducted three related medical home analyses using slightly different reference groups for comparisons (see Exhibit S.6). These analyses focus on differences in outcomes between FQHCs that achieved NCQA Level 3 PCMH recognition compared to sites without such recognition after controlling for baseline differences. These analyses are important because CMS and other policymakers are likely to be interested in understanding whether the PCMH model—and NCQA Level 3 PCMH recognition in particular—had a demonstrable effect on the cost and quality of care for Medicare beneficiaries, regardless of the effectiveness of the intervention supports provided as part of the FQHC APCP Demonstration.

In Medical Home Effect Analyses 1 and 2, we compared data for beneficiaries attributed to all FQHCs that achieved NCQA Level 3 PCMH recognition (whether from the demonstration or comparison group) with data, respectively, for (a) beneficiaries attributed to sites that did not

achieve NCQA Level 3 PCMH recognition—including those that received alternate forms of recognition and (b) beneficiaries attributed to sites that did not achieve any recognition at all.[8] In Medical Home Effect Analysis 3, we focused only on comparison sites, contrasting outcomes over time for beneficiaries attributed to comparison FQHCs that achieved NCQA Level 3 recognition with outcomes for beneficiaries attributed to comparison FQHCs with no recognition.

Exhibit S.6. Comparison Groups Used in Medical Home Effect Analyses

Analysis 1	Outcomes for beneficiaries attributed to all FQHCs (both demonstration and comparison) that **achieved NCQA Level 3** recognition (n=445)	***versus***	Outcomes for beneficiaries attributed to all FQHCs that **did not achieve** NCQA Level 3 recognition (n=885)
Analysis 2	Outcomes for beneficiaries attributed to all FQHCs that **achieved NCQA Level 3** recognition (n=445)	***versus***	Outcomes for beneficiaries attributed to all FQHCs that **did not achieve any** form of recognition (n=601)
Analysis 3	Outcomes for beneficiaries attributed to **comparison FQHCs** that achieved NCQA Level 3 recognition (n=94)	***versus***	Outcomes for beneficiaries attributed to **comparison FQHCs** that achieved **no** PCMH recognition (n=519)

A strength of **Medical Home Effect Analysis 1** is that it included all of the evaluation's 1,330 FQHCs and their attributed beneficiaries. However, defining the reference group to include the mix of FQHCs that achieve different types of recognition as well as no recognition could underestimate the effect of NCQA Level 3 recognition on beneficiary outcomes.

A strength of **Medical Home Effect Analysis 2** is the sharper contrast in beneficiary outcomes associated with FQHCs that achieve NCQA Level 3 recognition and FQHCs that achieve no recognition. This analysis omitted 284 FQHCs with recognition types other than

[8] In Medical Home Effect Analysis 1, we compared FQHCs from either the demonstration or comparison groups according to whether the FQHC had achieved NCQA Level 3 PCMH recognition (n=445 FQHCs) or not (n=885 FQHCs). The 885 FQHCs that had not achieved NCQA Level 3 PCMH recognition served as a reference group for this analysis. These 885 FQHCs were derived from three FQHC subgroups: (1) FQHCs that received alternate forms of recognition (i.e., AAAHC, Joint Commission, and state-based recognition); (2) FQHCs that received NCQA Level 1 or NCQA Level 2 PCMH recognition; and (3) FQHCs that received no PCMH recognition. In Medical Home Effect Analysis 2, we again compared FQHCs from either the demonstration or comparison groups according to whether the FQHC had achieved NCQA Level 3 PCMH recognition (n=445) or received no recognition at all (n=601). These analyses excluded 284 FQHCs that had achieved alternate forms of recognition (i.e., AAAHC, Joint Commission, and state-based recognition) and those that had received NCQA Level 1 or NCQA Level 2 PCMH recognition.

NCQA Level 3, allowing us to contrast extremes of recognition (NCQA Level 3 versus no recognition).

Medical Home Effect Analysis 3 helps address concerns that the medical home effect estimated among demonstration FQHCs was potentially influenced by the commitment of demonstration FQHCs to achieve NCQA Level 3 recognition by the end of the three-year demonstration, placing time pressure on many demonstration sites. To evaluate the medical home effect independent of such time pressure, the comparison of beneficiary outcomes in Analysis 3 focuses only on comparison group FQHCs.[9]

Results of Medical Home Effect Analyses

Across all three analyses, we found stronger effects on beneficiary outcomes from the medical home effect than from the demonstration effect (already shown in Exhibit S.5). Exhibit S.7 compares results for the demonstration effect with results for all three medical home analyses.

Medical home recognition affected beneficiary utilization, processes, and outcomes, although the effect sizes differed by cohort and reference group. For each outcome shown, Exhibit S.7 shows a steady increase in the number of statistically significant outcomes as we move from left to right across the table. The demonstration effect showed the weakest effect.

Compared with the demonstration effect analysis, we see a stronger impact with Medical Home Effect Analysis 1 when we regrouped the 1,330 FQHCs according to whether or not they achieved NCQA Level 3 PCMH recognition by the end of the demonstration. This analysis showed some total cost savings, but appeared to underestimate the medical home effect by including in the reference group both FQHCs that may have achieved other forms of PCMH recognition and those that received no recognition at all.

With Medical Home Effect Analysis 2, we see a decrease in hospital admissions and in inpatient spending, as well as strong total cost savings of $271 per beneficiary per year. Also of note, moving from left to right in Exhibit S.7, we see stronger effects for Year 3 than for Year 2 and Year 1. This is consistent with our hypothesis that structural changes within FQHCs that have achieved medical home recognition take time to have effects on patients. Demonstrating the increasing effect size by year supports the qualitative evaluation findings highlighting the many years required to document medical home effects on beneficiary outcomes.

---

[9] Medical Home Effect Analysis 3 is limited only to comparison group FQHCs in an effort to isolate a medical home effect independent of the three-year time to recognition effect, which has potential to confound medical home effect analyses for demonstration FQHCs. This analysis compares outcomes over time for beneficiaries attributed to comparison FQHCs that achieve NCQA Level 3 PCMH recognition (n=94) with beneficiaries attributed to comparison FQHCs that receive no PCMH recognition (n=519). These analyses exclude the 214 comparison FQHCs that have received alternate forms of recognition (i.e., AAAHC, Joint Commission, and state-based recognition) and those that have received NCQA Level 1 or NCQA Level 2 PCMH recognition.

With Medical Home Effect Analysis 3, we see an even stronger medical home effect. This sequence of analyses shows a medical home effect consistent with CMS's goals of better access, better care, and better health with lower costs. As shown in Exhibit S.7, utilization among beneficiaries attributed to FQHCs that achieved recognition during the three-year demonstration was more consistent with CMS's goals for access than was utilization among beneficiaries attributed to FQHCs not achieving recognition. CMS's goals include better access to ambulatory services, which we see with marked increases in FQHC visits across the three demonstration years, especially for recognized FQHCs. Similarly, we see evidence for fewer ED visits and a trend toward fewer hospital stays among recognized sites (noted with Medical Home Effect Analyses 2 and 3). We also see improved diabetes processes and lower costs for beneficiaries attributed to FQHCs that achieve recognition relative to those that do.

Exhibit S.7. Effect of NCQA Level 3 PCMH Recognition on Utilization, Process, Spending, and Beneficiary Experience Measures

Analysis Type	Demonstration Effect			Medical Home Effect 1			Medical Home Effect 2			Medical Home Effect 3		
Comparison	Demonstration vs. Comparison FQHC Estimate			NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition Estimate			NCQA Level 3 vs. Received No Recognition Estimate			NCQA Level 3 Recognition vs. Received No Recognition Estimate		
Cohort Inclusion	All Demonstration (503) & All Comparison (827) FQHCs			All NCQA Level 3 (445) & All Not Level 3 (885) Recognized FQHCs			All NCQA Level 3 (445) & All Not-Recognized (601) FQHCs			Only Comparison NCQA Level 3 FQHCs (94) & Not-Recognized (519) FQHCs		
UTILIZATION (per 1,000 beneficiaries per year) [a]												
FQHC visits	**49.66*** **	**97.17*** **	**105.19*** **	**83.33*** **	**157.08*** **	**154.26*** **	**98.77*** **	**186.53*** **	**200.89** **	**72.38*** **	**160.06*** **	**207.83*** **
Non-FQHC primary care visits	–8.28	–11.49	13.75	–8.48	**–30.62***	**–39.62** **	–10.61	**–61.85*** **	**–62.02*** **	20.48	–7.53	**–46.82***
Total primary care visits	**39.09***	**63.00*** **	**78.71*** **	**54.08** **	**93.15*** **	**43.26***	**60.42*** **	**90.00*** **	**62.94*** **	**57.54***	**109.01*** **	**122.73*** **
Specialist visits	10.70	–5.83	–3.54	1.20	**-36.00***	–10.00	-17.18	**–44.64** **	**–61.89*** **	–29.88	**–42.95**[†]	**–76.69*** **
Total ED visits	**23.47***	**26.10** **	**31.38*** **	**16.66**[†]	**22.55***	**29.45*** **	3.06	0.74	0.38	–13.33	3.89	–2.85
Outpatient-only ED visits	**21.01** **	**24.48** **	**32.66*** **	12.99	**18.52***	**23.77** **	7.49	6.31	8.10	–11.37	1.37	–0.24
Inpatient admissions	4.67	**6.83***	2.72	–0.13	4.12	–2.91	**–6.98***	–3.69	**–10.35*** **	–4.18	–5.11	**–9.55**[†]
Inpatient ambulatory care sensitive conditions (ACSC) admissions	1.05	0.85	–1.12	0.33	-0.20	0.05	–0.70	–1.41	–1.05	–1.17	–1.03	–0.67
Inpatient readmissions	0.06	–0.76	–0.44	0.10	–0.68	–0.65	0.44	0.30	–0.20	0.00	–0.07	–0.84
PROCESS (percentage points)												
All four recommended diabetes tests	**1.39*** **	0.22	0.45	**1.89*** **	**1.58*** **	**1.69*** **	**1.72*** **	**1.43*** **	**1.45*** **	0.77	**1.49** **	**1.18***

Analysis Type	Demonstration Effect			Medical Home Effect 1			Medical Home Effect 2			Medical Home Effect 3		
Comparison	Demonstration vs. Comparison FQHC Estimate			NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition Estimate			NCQA Level 3 vs. Received No Recognition Estimate			NCQA Level 3 Recognition vs. Received No Recognition Estimate		
Cohort Inclusion	All Demonstration (503) & All Comparison (827) FQHCs			All NCQA Level 3 (445) & All Not Level 3 (885) Recognized FQHCs			All NCQA Level 3 (445) & All Not-Recognized (601) FQHCs			Only Comparison NCQA Level 3 FQHCs (94) & Not-Recognized (519) FQHCs		
HbA1c test	0.18	**–0.73†**	0.54	**1.67*** **	0.68	**0.70†**	**1.63*** **	**0.86***	**0.82***	-0.45	-0.84	**-1.07***
LDL test	0.51	–0.33	–0.12	0.48	0.16	**1.00***	0.21	-0.25	0.52	**-1.53***	-0.27	0.04
Eye exam	**1.97*** **	**0.91†**	0.46	**1.84*** **	**1.17***	**1.23****	**2.02*** **	**1.50*** **	**1.13****	**1.51***	**2.34*** **	**2.18*** **
Nephropathy test	**1.57****	**1.14***	**2.10*** **	**2.62*** **	**3.36*** **	**2.62*** **	**2.04*** **	**2.47*** **	**2.04*** **	0.01	**1.42†**	1.00
Lipid test for patients with ischemic vascular disease	–0.24	–0.76	–0.57	–0.47	–0.64	–0.41	-0.21	-0.41	-0.14	-1.77	-0.14	0.22
SPENDING (dollars per beneficiary per year) [b]												
Total Medicare expenditures	35.78	75.49	**162.86†**	-247.74*	–144.03	**–155.86†**	-232.90**	-234.92**	-272.85**	-277.54*	-327.25*	-434.12***
Inpatient expenditures	-31.48	80.44	77.56	-184.85*	–52.02	–62.66	–156.33*	–150.04**	–201.91***	-159.38	-227.93**	-279.57***
Part B expenditures	-2.70	23.49	61.87***	-45.85*	-48.19**	-5.92	–42.14*	–60.85***	–62.07***	-74.00**	-105.03***	-118.17***
HEALTH STATUS												
Mental health status			–0.43			-0.29			-0.46			0.85
Physical health status			0.28			0.29			0.19			-0.20

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014) and of RAND beneficiary survey results. Values represent difference-in-differences estimates.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] Utilization results are reported per 1,000 beneficiaries; FQHC visits included any visit to an FQHC regardless of provider specialty. PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Inpatient ACSCs are reported as the number of inpatient hospital admissions for chronic ACSCs as a total count per 1,000 beneficiaries per year, adjusted for beneficiary eligibility to estimate full utilization for

the year. ACSCs are based on AHRQ's Prevention Quality Indicators (PQIs) and are conditions for which good outpatient care may prevent the need for hospitalization. Hospitalizations with a primary diagnosis of one of nine chronic ACSCs were included in these rates: (1) diabetes short-term complications (ketoacidosis, hyperosmolarity, coma); (2) diabetes long-term complications (renal, eye, neurological, or circulatory); (3) chronic obstructive pulmonary disease or asthma in older adults; (4) hypertension; (5) congestive heart failure; (6) angina without procedure; (7) uncontrolled diabetes; (8) asthma in younger adults; (9) lower-extremity amputation among patients with diabetes. Inpatient readmissions are measured as 30-day hospital wide unplanned readmissions.

[b] Spending results are reported as per beneficiary per year ($). Inpatient spending includes all claims found in the inpatient file. Noninstitutional provider spending includes all claims for services found in the carrier file (also known as the Physician/Supplier Part B claims file). Most claims are from noninstitutional providers, such as physicians, physician assistants, clinical social workers, and nurse practitioners.

Exhibit S.8 repeats many of the results shown in Exhibit S.7 but is designed to illustrate medical home effects (using Medical Home Effect Analysis 1) in a manner comparable to the approach used in Exhibit S.5. As noted above, compared with the results of the demonstration effect analyses, the medical home effects are consistently stronger, increase in effect size with consecutive demonstration years, show results consistent with the hypothesized effect of medical homes, and indicate a major demonstration success as the demonstration was responsible for substantially increasing the number of NCQA Level 3 recognized FQHCs.

Exhibit S.8. Year-by-Year and Cumulative Medical Home Effect on Utilization, Process, and Spending Outcome Measures

	Year-by-Year Medical Home Effect (Difference-in-Differences)						Cumulative Medical Home Effect (Difference-in-Differences)	
	Year 1		Year 2		Year 3		Years 1, 2, and 3 Combined	
Outcome Measures[a]	**Estimate**	**95% CI**	**Estimate**	**95% CI**	**Estimate**	**95% CI**	**Estimate**	**95% CI**
Aggregate results for all demonstration beneficiaries								
FQHC visits (per year)	**12,148*** **	**8,243, 16,053**	**30,272*** **	**25,212, 35,331**	**34,623*** **	**29,357, 39,889**	**66,546*** **	**55,134, 77,956**
Non-FQHC primary care visits (per year)	**–1,237***	**–4,779, 2,305**	**–5,900** **	**–11,188, –612**	–8,893	–15,190, –2,597	**–17,524** **	**–29,520, –5,528**
Total primary care visits	**7,883** **	**3,150, 12,617**	**17,952*** **	**11,453, 24,451**	**9,709***	**2,275, 17,143**	**34,395*** **	**20,029, 48,762**
Specialist visits (per year)	173	–3,994, 4,339	**–6,931***	**–13,077, –785**	–2,239	–9,052, 4,575	–4,649	–18,785, 9,491
Total ED visits (per year)	**2,428†**	**–435, 5,291**	**4,347***	**757, 7,937**	**6,610*** **	**2,688, 10,531**	**11,125***	**1,875, 20,373**
Inpatient admissions (per year)	–18	–1,099, 1,063	794	–503, 2,091	–653	–2,075, 770	–81	–4,537, 4,374
Inpatient ACSC admissions (per year)	48	–313, 410	–38	–548, 473	12	–473, 497	–179	–1,576, 1,216
Inpatient readmissions (percentage points)	3,859	–33,123, 40,840	–30,049	–76,310, 16,213	–146	–70,452, 12,940	–70,356	–164,438, 23,850
All four recommended diabetes tests[b]	**18,206*** **	**10,937, 25,475**	**18,820*** **	**10,464, 27,176**	**21,602*** **	**12,981, 30,223**	**55,455*** **	**36,195, 74,715**
Total Medicare expenditures without care management fee payments (in millions, per year)	**–36.11***	**–65.63, –6.59**	–27.76	–61.43, 5.92	**–34.98†**	**–72.87, 2.91**	**–100.99** **	**–177.06, –24.92**
Inpatient expenditures (in millions, per year)	**–26.95***	**–48.47, –5.42**	–10.03	–31.89, 11.82	–14.06	–38.33, 10.21	**–53.84***	**–103.09, –4.58**
Part B expenditures (in millions, per year)	**–6.68***	**–12.71, 0.65**	**–9.29** **	**–16.08, –2.50**	–1.33	–8.43, 5.77	**–17.19***	**–31.65, –2.73**
Per beneficiary results								
FQHC visits (per 1,000 beneficiaries per year)	**83.33*** **	**56.54, 110.12**	**157.08*** **	**130.82, 183.33**	**154.26*** **	**130.80, 177.73**	**118.21*** **	**97.94, 138.48**

Outcome Measures[a]	Year-by-Year Medical Home Effect (Difference-in-Differences)						Cumulative Medical Home Effect (Difference-in-Differences)	
	Year 1		Year 2		Year 3		Years 1, 2, and 3 Combined	
	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Non-FQHC primary care visits (per 1,000 beneficiaries per year)	**–8.48***	**–32.78, 15.81**	**–30.62****	**–58.05, –3.18**	–39.62	–67.68, –11.57	**–31.13****	**–52.44, –9.82**
Total primary care visits (per 1,000 beneficiaries per year)	**54.08****	**21.61, 86.55**	**93.15*****	**59.43, 126.87**	**43.26***	**10.14, 76.38**	**61.10*****	**35.58, 86.62**
Specialist visits (per 1,000 beneficiaries per year)	1.20	–27.40, 29.77	**–36.00***	**–67.86, –4.07**	–10.00	–40.33, 20.38	–8.26	–33.37, 16.86
Total ED visits (per 1,000 beneficiaries per year)	**16.66†**	**–2.99, 36.30**	**22.55***	**3.93, 41.18**	**29.45*****	**11.98, 46.92**	**19.76***	**3.33, 36.19**
Inpatient admissions (per 1,000 beneficiaries per year)	–0.13	–7.54, 7.29	4.12	–2.61, 10.85	–2.91	–9.25, 3.43	–0.14	–8.06, 7.77
Inpatient ACSC admissions (percentage points)	0.33	–2.15, 2.81	–0.20	–2.85, 2.45	0.05	–2.11, 2.21	–0.32	–2.80, 2.16
Inpatient readmissions (percentage points)	0.10	–0.89, 1.10	–0.68	–1.73, 0.37	–0.65	–1.60, 0.29	–0.56	–1.31, 0.19
All four recommended diabetes tests	**1.89*****	**1.13, 2.64**	**1.58*****	**0.88, 2.28**	**1.69*****	**1.01, 2.36**	**1.61*****	**1.05, 2.17**
Total Medicare expenditures without care management fee payments (per beneficiary per year)	**–247.74***	**–450.24, –45.23**	**–144.03†**	**–318.77, 30.72**	–155.86	–324.68, 12.96	**–179.39****	**–314.52, –44.26**
Inpatient expenditures	**–184.85***	**–332.49, –37.21**	–52.02	–165.36, 61.32	–62.66	–170.78, 45.47	**–95.63***	**–183.13, –8.13**
Part B expenditures	**–45.85***	**–87.21, –4.48**	**–48.19****	**–83.43, –12.95**	–5.92	–37.55, 25.71	**–30.54***	**–56.23, –4.85**

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

NOTE: The year-by-year medical home effect represents the change in outcomes in each year of the demonstration relative to the baseline year among sites that achieved NCQA Level 3 PCMH recognition relative to the change in outcomes for sites that did not achieve Level 3 recognition. Both demonstration and comparison sites are included in the Level 3 recognition group and the nonrecognized group.

Cumulative difference-in-differences estimates are analyzed by pooling beneficiary-level yearly outcome measurements over multiple years of the demonstration period. Up to three years of annual outcomes are analyzed together, independent of the chronological order of each yearly measurement. For example, each year-three cumulative effect estimate uses outcomes from year 1, year 2, and year 3 of the demonstration period, that are analyzed as if they occurred during the same time period. Results that aggregate utilization and spending outcomes across all beneficiaries participating in the demonstration are included in the top panel, whereas per-beneficiary outcomes are presented in the bottom panel.

[a] Utilization results are reported per 1,000 beneficiaries; FQHC visits included any visit to an FQHC regardless of provider specialty. Primary care visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Inpatient readmissions are measured as 30-day hospital-wide unplanned readmissions, measured as percentage points. All diabetes tests include HbA1c, LDL, eye exams, and nephropathy tests, all measured as percentage points. Spending results are reported as per beneficiary per year ($). Inpatient expenditures include all claims found in the inpatient file.

Incomplete Transformation and Unintended Consequences

Despite the positive effects of medical home recognition, site leaders, clinicians, and staff reported by the end of the demonstration that more needed to be done before their medical homes

could optimize beneficiary experiences and outcomes. Some sites realized only late in the demonstration period how much change was required to achieve NCQA Level 3 PCMH recognition. As a result, they had to rush to implement changes to submit application for NCQA Level 3 PCMH recognition. In many cases, the application was successful, but significant efforts were still required to incorporate medical home principles and activities into daily practice in a relatively short amount of time.

Although the majority of demonstration sites achieved NCQA Level 3 PCMH recognition, the qualitative data from site leaders suggest that many sites—even among those that attained Level 3 recognition—were still in substantial transition, even at the end of the demonstration. Sites continued to struggle with the level of change required. Demonstration site respondents identified a range of core PCMH practices they believed required additional transformation work—even after attaining recognition—in order for the sites to be considered fully functioning PCMHs:

- team-based care (including care coordination and other "expanded team" roles)
- tracking and coordinating specialist and lab/diagnostic services
- population management
- other EHR functionality supporting the PCMH model of care (i.e., adding or improving the practical usability of features for documenting care, self-management support, tracking and coordinating care, and other core PCMH practices).

A number of other specific PCMH practices were reported by sites as needing "fine-tuning" or additional implementation work, including the patient web portal, a less-central element to the NCQA standards that some sites decided involved too much effort to adequately address before the final demonstration deadline to submit for recognition. Some respondents also noted that the transition climate would be extended beyond the end of the demonstration for sites planning to spread the PCMH transformation and recognition effort to other sites within the FQHC and/or beginning preparations for re-recognition to the NCQA 2014 standards.

Furthermore, beneficiaries attributed to sites that achieved NCQA Level 3 PCMH recognition experienced worse performance relative to those attributed to sites that did not achieve NCQA Level 3 recognition or that received no recognition in several areas shown in Chapter Twelve. For example, beneficiaries attributed to NCQA Level 3 sites reported being less likely to:

- get an appointment with a specialist when needed
- assign a rating of ten points on a ten-point scale to either their primary care providers or to their specialists
- report that clerks and receptionists treated them with respect
- acknowledge that they received instructions about health literacy from their provider.

These findings suggest that the challenges and burdens associated with achieving PCMH recognition can have mixed effects on beneficiary experiences, leading in many cases to better

outcomes but also to unintended consequences. Lessons from the implementation of this demonstration should be considered in the design and evaluation of future medical home implementation efforts, particularly in regard to the possible effect on beneficiary experiences.

Limitations

These analyses have several limitations. First, the assignment of sites to demonstration or comparison groups was not randomized. Sites were invited to apply to participate in the demonstration, and selecting comparison groups was difficult. We used analytic tools to identify the effect of the demonstration, and, separately, to evaluate the effect of medical home recognition, on beneficiary outcomes; however, demonstration and comparison sites might differ in their propensity to achieve PCMH recognition in ways that are unobservable and may have cost trajectories and historical patterns in performance on quality measures that differ from sites that never become recognized.

Second, while our evaluation of Medicare beneficiaries included dual-eligible FQHC users with both Medicaid and Medicare insurance, only a small part of our evaluation focused on Medicaid. We faced many challenges related to the completeness of claims data for Medicaid beneficiaries, including the lag in availability of Medicaid claims data, which are related to a limited assessment of spillover of the demonstration effects to the Medicaid population.

Third, demonstration sites were selected at the "site level" rather than the grantee level, which meant that we were not always able to conduct each portion of the analysis purely at the "site level."

Fourth, comparison sites were exposed to many of the same or similar resources as were provided to demonstration sites through the intervention. This made it difficult to isolate the effect of the intervention from the effects of other resources designed to support PCMH recognition and transformation.

Fifth, during the first half of the demonstration, the lack of coordination of TA and attempts to measure the uptake of these programs limited the evaluation team's ability to fully assess the contribution of some site characteristics and demonstration's components on FQHC and beneficiary outcomes.

Sixth, our claims-based measure of FQHC access may underestimate the extent of increased access experienced by beneficiaries attributed to demonstration FQHCs by underrepresenting increased access, especially if clinics are increasingly using web-based portals and phone meetings with beneficiaries as new methods for delivering care.

Seventh, it is still too early to understand the extent to which underuse remains a major issue. Over time, we would expect that health service needs will be met, even including a backlog of services that may be overdue.

Finally, the time period for the demonstration may have been too short for the full effects of PCMH transformation to become apparent, and the demonstration's effects on acute care

utilization and spending might lag behind changes in primary care utilization by one or more years. The evaluation time period was insufficient to evaluate the longer-term impacts on clinics or to determine the sustainability of the changes made.

Conclusions

As with any new program designed to improve patient care and reduce cost, processes required to change a health care system and adhere to program goals take time. Along the way, some, but not all, aspects of the desired effect may be observed.

Site leaders, clinicians, and staff reported by the end of the demonstration that more needed to be done before their medical homes would optimize beneficiary experiences and outcomes. These key stakeholders also noted persistent increased stress and pressure associated with achieving recognition. Some beneficiary-reported experiences improved and others worsened with the medical home effect.

Nonetheless, it appears that the FQHC APCP Demonstration did improve medical home recognition, and that medical home recognition is associated with beneficiary outcomes consistent with CMS's goals of better access and better care at lower costs. By the end of the demonstration, beneficiaries attributed to FQHCs that achieved NCQA Level 3 PCMH recognition had better access to FQHCs, better evidence-based processes, and lower costs.

Acknowledgments

This project was made possible by funding from the Centers for Medicare & Medicaid Services (CMS) and much input from our Contracting Officer's Representative, Katherine Giuriceo, as well as invaluable input from Suzanne Wensky. We thank them for their helpful insight. In addition, we would like to thank the many research assistants who worked on this project at the RAND Corporation, including Lauren Andrews, Courtney Armstrong, Ian Brantley, Emily Butcher, Gavin Fahey, Racine Harris, Samuel Hirshman, Lauren Hunter, Alice Kim, Christian Lopez, Ammarah Mahmud, and Rachel Ross.

We also appreciate the staff at Truven Analytics who supplied us with data on the baseline characteristics of the demonstration sites as well as continuing data on achievement of National Committee for Quality Assurance Primary Care Medial Home recognition; the staff at Actuarial Resources Corporation, who supplied us with claims data on the demonstration and comparison groups; the staff at the American Institutes for Research, who gave us metrics on their technical assistance and answered many questions for us along the way; the staff at the Primary Care Associations who attended focus groups or agreed to interviews; the staff at the Federally Qualified Health Centers (FQHCs) who completed the Clinician and Staff Survey; the leadership at the FQHCs who agreed to be interviewed; and the many Medicare beneficiaries who completed our two rounds of surveys. Without them, we would not have had anything on which to base our findings.

Finally, we thank our RAND colleague Susan Paddock and Marshall Chin at the University of Chicago for their careful technical reviews of multiple drafts of this document, as well as RAND colleagues Peter Hussey and Paul Koegel for additional valuable comments on this report. We also thank RAND communications analyst Kristin Leuschner for her many contributions to improve the readability and flow of this report.

Glossary

Baseline period: The year prior to demonstration initiation (November 1, 2010, through October 31, 2011).

Comparison FQHCs: Federally Qualified Health Centers (FQHCs) selected by RAND for comparison to the demonstration FQHCs.

Demonstration FQHCs: All FQHCs ever selected to participate in the FQHC Advanced Primary Care Practice (APCP) Demonstration (including those which voluntarily discontinued enrollment, those which had enrollment terminated, and late entrants).

Demonstration period: The period between demonstration initiation (November 1, 2011) and the latest reportable date (the demonstration went through October 31, 2014).

Dropout FQHCs: Demonstration FQHCs that dropped out, including FQHCs that voluntarily discontinued enrollment and FQHCs with enrollment terminated by CMS.

Late entrant FQHCs: FQHCs selected to participate in the FQHC APCP demonstration after November 1, 2011.

Participating FQHCs: Demonstration FQHCs participating in the demonstration as of August 26, 2013 (and which had not dropped out).

Abbreviations

AAAHC	Accreditation Association for Ambulatory Health Care
ACA	Affordable Care Act
ACO	accountable care organizations
ACS	ambulatory care-sensitive
ACSC	ambulatory care sensitive condition
AHRQ	Agency for Healthcare Research and Quality
AIR	American Institutes for Research
APCP	advanced primary care practices
ARC	Actuarial Research Corporation
ARRA	American Recovery and Reinvestment Act
BMI	body mass index
CASE	Clinician and Staff
CCN	CMS certification number
CG-CAHPS	Clinician and Group Consumer Assessment of Healthcare Providers and Systems
CI	confidence interval
CMS	Centers for Medicare and Medicaid Services
COPD	chronic obstructive pulmonary disease
DME	durable medical equipment
E&M	evaluation and management
ED	emergency department
EHR	electronic health record
ESRD	end-stage renal disease
FFS	fee-for-service
FQHC	Federally Qualified Health Center
FY	fiscal year
HbA1c	hemoglobin A1c
HCC	hierarchical condition category
HCCN	Health Center Control Networks
HEDIS	Healthcare Effectiveness Data and Information Set
HIT	Health information technology
HPSA	health professional shortage area
HRSA	Health Resources and Services Administration
ICD–10	International Classification of Diseases, Tenth Revision
IT	information technology

LDL	low-density lipoprotein
LPN	licensed practical nurse
MA	medical assistant
MAX	Medicaid Analytic eXtract
MCO	managed care organization
MCS	Mental Component Score
MD	medical doctor
NACHC	National Association of Community Health Centers
NCQA	National Committee for Quality Assurance
NPI	National Provider Identifier
ONC	Office of the National Coordinator for Health Information Technology
OR	odds ratio
PA	physician assistant
PBPQ	per-beneficiary-per-quarter
PCA	primary care associations
PCS	Physical Component Score
PCMH	patient-centered medical home
PCP	primary care provider
PHQ–4	Four-Item Patient Health Questionnaire for Anxiety and Depression
PI	performance improvement
PMPM	per member per month
PQI	Prevention Quality Indicator
PTAN	Provider Transaction Access Number
QA	quality assurance
QI	quality improvement
RAS	Readiness Assessment Survey
RN	registered nurse
SD	standard deviation
SE	standard error
SF	Short Form
SNMHI	Safety Net Medical Home Initiative
TA	technical assistance
TIN	Tax Identification Number
UDS	Uniform Data System

1. Introduction

1.1. Overview of the FQHC APCP Demonstration

Federally Qualified Health Centers (FQHCs) serve an important function nationally as organizations funded by Section 330 of the Public Health Services Act (Public Law 78-410) to offer primary health care to underserved populations. Advanced primary care practices (APCPs) help FQHCs perform this function more effectively by transforming their practices to deliver advanced primary care services to Medicare beneficiaries. APCPs, also known as *patient-centered medical homes*, or PCMHs, are physician- or nurse practitioner–directed medical practices that provide continuous, comprehensive, coordinated, and patient-centered medical care. PCMHs connect multiple points of health delivery by utilizing a team approach with the patient at the center.

PCMH principles are designed to encourage doctors, hospitals, and other health care providers to work together to better coordinate care for patients. The concept of the "medical home" has existed for more than four decades, although in recent years, there has been an increased emphasis on operationalizing medical home principles.[10] The goal of the FQHC APCP Demonstration was to use the PCMH model to facilitate continuous, comprehensive, patient-centered medical care in order to improve patient health and quality of care while lowering the cost of care provided to Medicare beneficiaries served by FQHCs.

In December 2009, President Barack Obama directed the U.S. Department of Health and Human Services to implement a three-year demonstration of interventions designed to support participating FQHCs in achieving the National Committee for Quality Assurance's (NCQA's) Level 3 PCMH recognition, the NCQA's highest level of medical home recognition. Level 3 recognition is based on NCQA's 2011 scoring of six standards: enhancing access and continuity, identifying and managing patient populations, planning and managing care, providing self-care support and community resources, tracking and coordinating care, and measuring and improving performance. Each standard is composed of multiple elements, and sites achieve NCQA Level 1, 2, or 3 PCMH recognition based on their total number of points scored across elements. FQHCs were required, as a condition of participation, to achieve NCQA Level 3 PCMH recognition within the three-year demonstration timeframe.

The demonstration provided three intervention components to support FQHC transformation into PCMHs for the demonstration participants: quarterly care management fee payments, technical assistance (TA), and data and performance feedback reports. The Centers for Medicare

[10] To put the importance of this effort in perspective, additional information about the history of medical homes is provided in Appendix A1.

& Medicaid Services (CMS) expected that 90 percent of FQHCs receiving these interventions would achieve NCQA Level 3 PCMH recognition by the end of the demonstration. These intervention components, designed by CMS, were delivered by a network of organizations with complementary purposes.

- CMS provided participating FQHCs with a quarterly care management fee payment of $18 for each eligible Medicare beneficiary to support patient-centered medical care.
- NCQA offered TA to help participating FQHCs obtain NCQA Level 3 PCMH recognition. FQHCs were offered assistance to prepare documentation for NCQA PCMH recognition. FQHCs also received training and assistance to support and guide them in their transformation across all six NCQA standards through an extensive learning system involving the Health Resources and Services Administration (HRSA), the American Institutes for Research (AIR), and primary care associations (PCAs). AIR, the regional PCAs, and Qualis Health (Qualis) assisted the FQHCs with the preparation and completion of the biannual Readiness Assessment Surveys (RASs). AIR provided office hours, conducted webinars, and distributed newsletters providing information that highlighted expectations, deadlines, successes, and challenges. The PCAs provided one-on-one assistance and monitored the progress of FQHCs in their region. Qualis provided an intense review and feedback of RAS submissions.
- Participating FQHCs periodically received three types of feedback reports. First, the biannual NCQA RAS report provided FQHCs with current site-level NCQA PCMH recognition-level and overall score trends. Second, the quarterly cost and utilization data reports provided site-level claims-based utilization measures (e.g., inpatient admissions, ED visits), Medicare expenditure summary data (e.g., average total Medicare expenditure per beneficiary), and quality of care measures (e.g., glycated hemoglobin blood [HbA1c] testing, retinal eye exams, low-density lipoprotein [LDL] screening, and nephropathy testing rates among beneficiaries with diabetes). Third, a quarterly claims-based beneficiary-level report provided identifiable beneficiary data summarizing key outcomes (e.g., cost, utilization, health) for beneficiaries attributed to the FQHC.

Ultimately, the goals of the demonstration were to augment each clinic's infrastructure to improve the safety, effectiveness, efficiency, timeliness, and quality of care; patient access to care; adherence to evidence-based guidelines; care coordination and care management; and patient experiences with care. It was hoped that these improvements, in turn, would transform the clinic into a medical home and lead to better management of chronic conditions, decreased use of certain health care services (e.g., hospitalizations, emergency department [ED] visits, duplicative/unnecessary tests and procedures), increased use of other services (e.g., preventive services), and improved beneficiary outcomes with reductions in health care expenditures. To determine whether these goals were met, CMS awarded a contract to the RAND Corporation to conduct an independent evaluation of the demonstration.

1.2. Overview of the Evaluation

Key Policy Questions

While many medical home evaluations have been conducted or are under way, this is, to date, the largest medical home evaluation of FQHCs. In the evaluation, RAND sought answers to three key policy questions:

- What are the effects of the demonstration on practice structure and medical home recognition?
- Do demonstration sites deliver better beneficiary care and outcomes than comparison sites?
- How does medical home recognition affect beneficiary processes and outcomes?

Note that, throughout this report, we use the term "site" as a synonym for "FQHC."

In answering these questions, we adopted a rigorous analytic method mixing qualitative and quantitative approaches. Where possible, we sought to compare demonstration sites receiving the CMS-directed incentives listed above to comparison sites without such incentives. Additional information about methods can be found in Appendixes A2, B, C, and D.

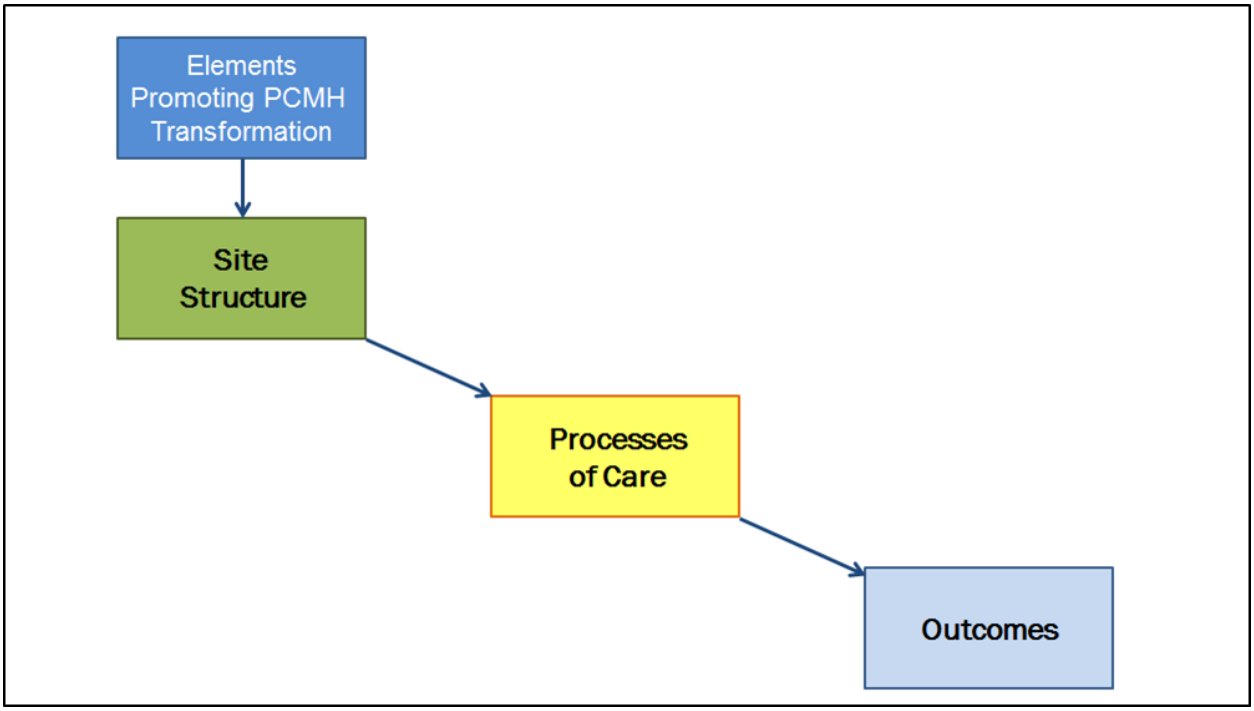
We describe our evaluation approach in more detail later in this chapter. First, however, we review the conceptual model we used in generating our policy questions.

Conceptual Model and Implications

We used Donabedian's classic quality-of-care model to anchor the evaluation (Donabedian, 1980; 1982; 1988). Donabedian's model specifies that good structure increases the realization of good process, which then increases the realization of valued outcomes. In this model, structure describes the attributes of the settings in which health care occurs. Structure includes material resources (facilities, equipment, and funding) and human resources, including practice organization, quality review, and reimbursement methods. Process describes diagnostic or therapeutic services. Outcomes indicate what happens to patients as defined by the effects of care on the health status of patients and populations.

Consistent with this model, we hypothesized that the demonstration would produce a "cascade" effect. That is, the model assumes that the interventions associated with the demonstration (i.e., the per-beneficiary-per-quarter [PBPQ] care management fee payment and the various types of TA made available to demonstration sites) would have a positive effect on the structures of the FQHCs, i.e., assist in transforming FQHCs into PCMHs. We hypothesized that interventions to transform FQHCs into PCMHs would activate the quality-of-care cascade, with resultant changes in structures, processes, and outcomes. Exhibit 1.1 shows the building blocks of Donabedian's model and how they map to the evaluation of the FQHC APCP Demonstration.

Exhibit 1.1. Building Blocks of Donabedian's Model Mapped to the Evaluation of the FQHC APCP Demonstration

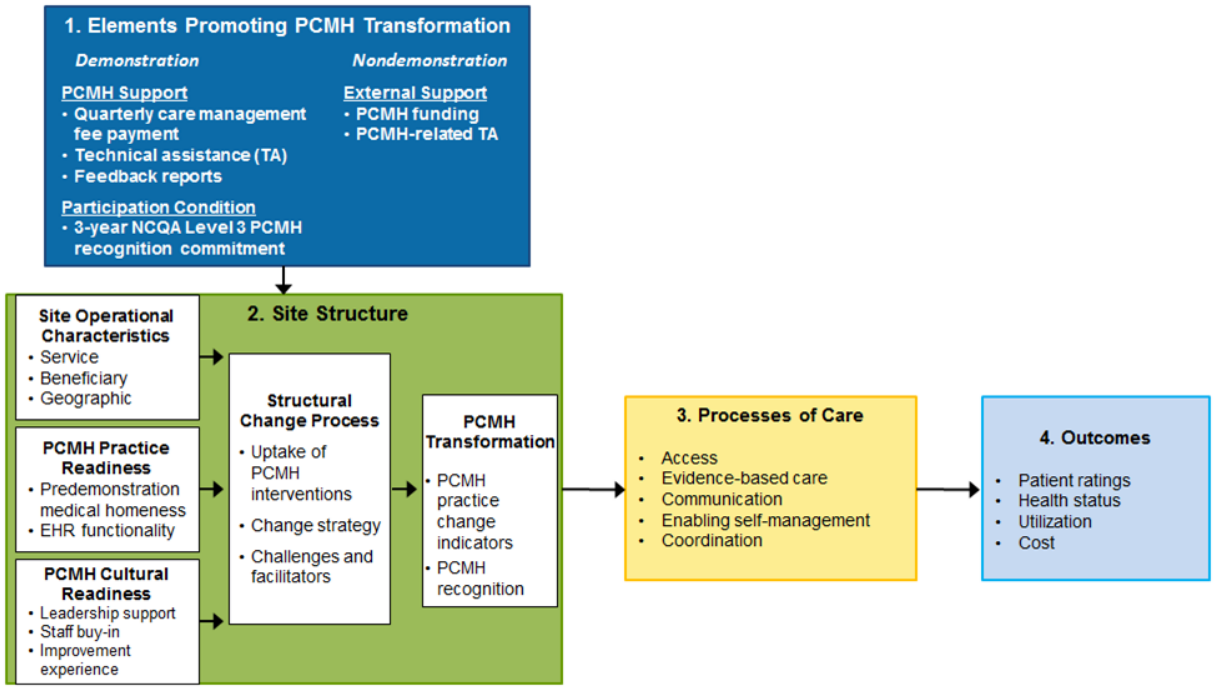


We began by studying the demonstration's effect on FQHC structures, FQHCs' adoption of PCMH attributes, and achievement of PCMH recognition. We then analyzed how the demonstration affected experiences, processes, and outcomes for beneficiaries attributed, respectively, to demonstration and comparison groups. Finally, we analyzed how medical home recognition affected beneficiary processes and outcomes.

The evaluation first sought to determine the extent to which exposure to interventions provided by the demonstration was associated with changes in structure as measured by NCQA Level 3 PCMH recognition (discussed in Chapter Two). Although we recognized that sites in various stages of working toward achieving NCQA Level 3 PCMH recognition might attain improved structures, processes, and outcomes along the way, we hypothesized that sites with more advanced medical home recognition status (i.e., NCQA Level 3 PCMH recognition) would show the effects of a "quality-of-care cascade," with successive changes in additional structures, processes, and outcomes. We expected that, across the demonstration's three years, demonstration FQHCs would have increasing exposure to elements promoting PCMH transformation. We hypothesized that more exposure to demonstration components and medical home recognition over time would lead to positive observable changes in beneficiary outcomes. In relation to outcomes, we assessed whether the enhanced structures and processes activated by interventions to transform FQHCs into medical homes improved utilization, process, and cost outcomes, as well as beneficiary experiences.

Exhibit 1.2 presents additional detail regarding the components within each of the boxes in the conceptual framework shown in Exhibit 1.1. Here we briefly describe the components within each box, discuss the relationships among the concepts in the boxes, and indicate which chapters in the report will discuss these concepts in greater detail.

Exhibit 1.2. Conceptual Model of Factors Affecting PCMH Transformation and Outcomes



Box 1 of Exhibit 1.2 is labeled "Elements Promoting PCMH Transformation." The left side of Box 1 focuses on *demonstration supports*, while the right side focuses on *nondemonstration supports*. *Demonstration supports* included the quarterly care management fee payment to participating FQHCs (discussed in Chapter Three), multiple types of TA (discussed in Chapter Four), and feedback reports (also discussed in Chapter Four). Another key element of the demonstration was the commitment by all participating demonstration sites to achieve NCQA Level 3 PCMH recognition by the end of the three-year demonstration. *Nondemonstration supports* (discussed in Chapters Three and Four) were accessible to both demonstration and comparison FQHCs. These supports included external funding to enhance PCMH infrastructure and practice, as well as external TA for the same purposes from a variety of sources.

Box 2 shows factors affecting site structure supportive of PCMH transformation as conceptualized by the evaluation team based upon organizational theory, clinical and practice observations, and a series of analyses that will be described throughout this report.

The three groups of factors within site structure are *site-level characteristics*, *structural change process*, and resulting *PCMH transformation*. The factors affecting the achievement of

PCMH recognition are discussed in Chapter Five, while pathways to recognition are discussed in Chapter Six.

Site-level characteristics are themselves composed of three key categories of factors, as shown on the left side of Box 2:

- *Site operational characteristics* encompass key service, beneficiary, and geographic characteristics.[11]
- *PCMH practice readiness* refers to the level of key medical home practices in place prior to the beginning of the demonstration for demonstration sites and prior to the first interview with the evaluation team for comparison sites, as well as whether the site had a fully functional electronic health record (EHR) system prior to the demonstration period.
- *PCMH cultural readiness* was reflected in a site's internal support for PCMH transformation, including leadership support and staff buy in, and its change culture developed through prior quality and practice improvement experiences.

Note that some site-level characteristics in each of these three categories exist separate from and precede the start of the demonstration. We have positioned the boxes in the order we did because we were interested in understanding how demonstration and nondemonstration supports (Box 1) interact with these characteristics and how a site's structural change processes to lead to PCMH transformation (Box 2), as discussed in detail in Chapters Five and Six.

Site-level characteristics were hypothesized to interact with elements designed to promote PCMH transformation in order to affect site-level *structural change processes* (discussed in Chapters Seven and Eight). These include the uptake of external PCMH supports (such as demonstration and other PCMH-related technical and financial assistance), the use of various change strategies, and the challenges and facilitators a site encounters during the PCMH effort. A site's ability to effectively implement change and overcome barriers (as represented by the structural change component of Box 2) in turn was posited to affect *PCMH transformation* (the final component in Box 2). PCMH transformation is signified by formal recognition—the main structural outcome of the demonstration and this evaluation—as well as other indicators of PCMH practice change, as shown through quantitative survey or qualitative expert assessments.

Box 3 shows beneficiary-level *processes of care*, including access, evidence-based care, quality of care, communication, patient self-management, and coordination of care.[12] Within the conceptual model, *processes of care* were hypothesized to affect *outcomes of interest* for

[11] Site-level service characteristics include years in operation, number of sites, total revenue per site (in millions), number of primary care physicians, and number of specialists. Site-level beneficiary characteristics include mean clinic-level age, mean hierarchical condition category (HCC) score, percentage disabled, percentage dual-eligible, and the number of Medicare beneficiaries attributed in the year preceding the demonstration. Site-level geographic characteristics include region, rural-urban continuum, and percentage of households in poverty.

[12] Beneficiary-level processes and outcomes are measured using both claims analyses and analyses of the longitudinal beneficiary survey.

beneficiaries and clinics, shown in Box 4, including beneficiary ratings of providers and staff, health status, utilization, and cost. Results for processes and outcomes are described in Chapters Nine through Fourteen.

Demonstration and Comparison Sites

In 2011, CMS selected 500 FQHCs that agreed to participate in the FQHC APCP Demonstration; subsequently, three replacement sites were selected.[13] Participating FQHCs were expected to achieve NCQA Level 3 PCMH recognition by the end of the demonstration, remain in the demonstration for the full three-year duration, submit revised readiness assessments every six months, comply with all monitoring requirements, and participate in TA.[14] Participating FQHCs were also expected to function as PCMHs; oversee preventive, acute, and chronic-disease care; facilitate patients having a place to receive specialty treatment if needed; and ensure that nurses and supporting FQHC staff coordinated follow-up care and communication with patients about appointments and medications. The evaluation team used available data about geographic, site-level, and patient characteristics to identify 827 comparison FQHCs that were similar to the 503 demonstration FQHCs, except that comparison FQHCs were not eligible for the demonstration care management fee payments or demonstration-specific TA. Beneficiaries receiving most of their care at a demonstration or comparison FQHC in the year prior to the demonstration were attributed to that FQHC for analysis purposes. The evaluation approach followed beneficiaries through to the end of the demonstration according to the FQHC to which they were initially attributed. Additional information about selection of comparison FQHCs is available in the First Annual Report[15] and information about attribution of beneficiaries can be found in Chapter Nine and Appendix C.

Our evaluation used NCQA Level 3 as our primary measure of PCMH recognition, though other forms of medical home recognition are available and were used by FQHCs, especially by comparison FQHCs. To add to our understanding of FQHCs and their recognition patterns, where feasible and useful, we supplemented analyses of NCQA Level 3 PCMH recognition with examinations of alternative forms of PCMH recognition, including recognition by the

[13] Initially, CMS identified 500 demonstration FQHCs to serve as demonstration sites. One of the initial 500 demonstration FQHCs was deemed ineligible in the second week of the demonstration and two more were deemed ineligible in the seventh month of the demonstration. One replacement site was added in the second month and two more were added in the ninth month. When additional sites dropped out or became ineligible, CMS decided not to replace them. Therefore, there were no more than 500 demonstration FQHCs at any given time, but 503 different FQHCs were involved at some point as demonstration sites.

[14] Federally Qualified Health Center, "Federally Qualified Health Center Advanced Primary Care Practice Demonstration Terms and Conditions," undated.

[15] Kahn, Katherine L., Justin W. Timbie, Mark W. Friedberg, Peter S. Hussey, Tara Lavelle, Peter Mendel, Liisa Hiatt, Beverly A. Weidmer, Aaron Kofner, Afshin Rastegar, J. Scott Ashwood, Ian Brantley, Denise D. Quigley, and Claude Messan Setodji, *Evaluation of CMS' FQHC APCP Demonstration: Final First Annual Report,* Santa Monica, Calif.: RAND Corporation, RR-886-CMS, 2015a.

Accreditation Association for Ambulatory Health Care (AAAHC), the Joint Commission, or individual states.

Analysis of Key Policy Questions

The evaluation used a mixed-methods framework in conjunction with the conceptual framework shown in Exhibit 1.2 to address three key policy questions.

Key Policy Question 1: What Are the Effects of the Demonstration on Practice Structure and Medical Home Recognition?

The first key policy question focused on the transformation of demonstration FQHC structures to better support PCMH principles as measured chiefly by demonstration FQHCs' achievement of NCQA Level 3 PCMH recognition. This question is illustrated in Exhibit 1.2 by the relationships between the elements promoting PCMH transformation in Box 1 and clinic structures in Box 2. The first key policy question sought to identify the extent to which FQHCs became medical homes by examining FQHC attainment of medical home recognition and identifying the factors associated with recognition. We also examined how FQHCs utilized intervention components to facilitate recognition and which intervention components had the greatest impact on attainment of recognition.

Becoming a medical home is a complex and time-consuming process. FQHCs could take many pathways in their pursuit of becoming a medical home. We used thematic and cross-case qualitative analyses to examine these pathways. In Chapters Five through Eight, we examine the factors that can influence sites' abilities to achieve PCMH transformation, including site characteristics, intervention components, challenges, and facilitators.

In Chapter Seven, we discuss the multiple challenges associated with FQHC transformation, examining both the general management of the practice change and improvement processes within FQHCs as well as changes associated with implementing specific PCMH-related care practices as delineated by the 2011 NCQA standards used. Finally, we analyzed interviews from clinicians and staff to learn their experiences and perceptions over time of FQHC changes to improve patient access and care.

Key Policy Question 1 is the focus of Chapters Two through Eight.

Key Policy Question 2: Do Demonstration Sites Deliver Better Beneficiary Processes and Outcomes Than Comparison Sites?

The second key policy question focused on whether beneficiaries attributed to demonstration FQHCs experienced better care processes and health outcomes than beneficiaries attributed to comparison FQHCs. We examined differences in changes over time in patient characteristics, utilization of services, loyalty and continuity, processes, patient experiences, and outcomes, as shown in Boxes 3 and 4 in Exhibit 1.2.

We hypothesized that, after exposure to interventions designed to promote PCMH recognition, beneficiaries associated with demonstration sites would experience improvements in utilization, processes, outcomes, and experiences over time compared with beneficiaries attributed to comparison sites. We used a difference-in-differences analytic approach that allowed us to see, after three years of exposure to the demonstration, whether beneficiaries attributed to demonstration sites experienced better outcomes than comparison site beneficiaries.

We then used mediation analyses to understand the nature and mechanisms through which an intervention such as the FQHC APCP Demonstration exerts its effects on beneficiary outcomes. We examined the "demonstration effect" to determine, in particular, the association between a demonstration site achieving NCQA Level 3 PCMH recognition and beneficiary processes and outcomes of care. Mediation analysis hypothesizes that in order for the demonstration to impact outcomes, changes such as medical home recognition are required, though additional pathways through which the demonstration can impact outcomes are also possible. As such, a mediation analysis splits the total impact of the demonstration into the part of impact that happens because of the ability of the FQHC to attain medical home recognition (the mediated effect), and the impact that happens through other mechanisms (the direct effect). In these analyses, we focused on beneficiary outcomes among all clinics, including both demonstration and comparison FQHCs.

Key Policy Question 2 is the focus of Chapters Nine through Eleven.

Key Policy Question 3: How Does Medical Home Recognition Affect Beneficiary Processes and Outcomes?

The third key policy question focused on the importance of medical home recognition as a factor associated with beneficiary outcomes among demonstration and comparison sites. In these chapters, we extended our analyses to comparing outcomes over time for beneficiaries attributed to demonstration or comparison FQHCs with NCQA Level 3 PCMH recognition to outcomes for beneficiaries attributed to FQHCs without such recognition. This question is important because CMS and other policymakers are likely to be interested in understanding whether the PCMH model had a demonstrable effect on the cost and quality of care for Medicare beneficiaries, regardless of the effectiveness of the transformation supports provided as part of the FQHC APCP Demonstration.

Key Policy Question 3 involved analyses linking the concepts represented by all four boxes from Exhibit 1.2, Elements Promoting Transformation, Site Structure, Processes of Care, and Outcomes. This question is the focus of Chapters Twelve through Fourteen.

Following the discussion of these three policy questions, we examine issues related to the remaining transformation (Chapter Fifteen) and draw conclusions from our analyses (Chapter Sixteen).

1.3. Analytic Approach

In this evaluation, we implemented a mixed methods approach to show from multiple perspectives how FQHCs changed and how PCMH recognition affected beneficiaries. Additional information on our qualitative methods is provided in Appendix A2. Appendix B describes the methods used to estimate demonstration and medical home effects. Appendix C describes the methods used to analyze Medicare and Medicaid claims. Appendix D describes the methods used to analyze beneficiary survey data, and Appendix A13 describes analyses of the Clinician and Staff Experience (CASE) survey.

Metrics

Our evaluation included key metrics that have been used in prior evaluations of medical homes. Clinic-level metrics include achievement of medical home recognition status. Beneficiary-level metrics include reductions in risk-adjusted utilization, including ED visits, ambulatory care-sensitive (ACS) and all acute inpatient admissions, and ACS and all readmissions within 30 days of inpatient admission. Cost metrics are defined as total per-beneficiary-per-quarter (PBPQ) costs and total PBPQ costs for high-risk patients (Rosenthal et al., 2012).

For this evaluation, we hypothesized that changes in ambulatory care metrics, such as utilization of primary care and FQHC services, would be observed earlier during the demonstration than would changes in ED visits, hospital stays, or clinical outcomes. This reflected the initial focus of demonstration interventions on changes within the FQHC itself. As access to care, information technology (IT), and team-based care developed, we hypothesized that changes in ED visits, hospital stays, or clinical outcomes would be observed. We also hypothesized that, as demonstration FQHCs improved access to medical services (e.g., timely visits), ancillary services (e.g., transportation), evidence-based care, health literacy, and patient-centeredness, they would better fulfill their patients' longstanding unmet needs for chronic medical care, preventive services, and ancillary services. This in turn, at least initially, could be associated with an increase, not a reduction, in overall costs and utilization.

In conceptualizing the transformation of FQHCs to PCMHs, we acknowledged the importance of the contextual characteristics of FQHCs and the characteristics of the Medicare beneficiaries who visit them. Laiteerapong and colleagues examined a general sample of adults and found that FQHC users had fewer office visits than comparable non–FQHC users, with equal or better preventive care (Laiteerapong et al., 2014). Mukamel suggests that annual spending for Medicare beneficiaries is about 10 percent lower at FQHCs than at other primary care practices (Mukamel et al., 2015). Given this history of lower utilization of services among FQHC-using Medicare beneficiaries, effective medical home interventions for FQHC users have to leverage the medical home attributes of improved access, evidence-based care, health literacy, and patient-centeredness to address unmet needs for chronic medical care, preventive services, and

ancillary services. However, an FQHC fulfilling these longstanding unmet needs could, at least initially, be associated with an increase, not a reduction, in overall costs and utilization.

To address this possibility, we employed not only the traditional metrics for assessing the medical home but also reports of the utilization of FQHC visits, during which Medicare beneficiaries could have acute, chronic, and preventive care needs met. Additionally, during the FQHC visits, beneficiaries might learn how they could access additional urgent, emergent, and specialty services, if needed.

Recommended metrics for evaluating a medical home intervention include cost, hospitalizations, and ED visits. For the FQHC APCP Demonstration evaluation, we hypothesized that changes in ambulatory care metrics, such as utilization of primary care and FQHC services, would be observed earlier during the demonstration than would changes in ED visits, hospital stays, or clinical outcomes. This reflected the initial focus of demonstration interventions on changes within the FQHC itself. As access to care, information technology, and team-based care developed, we hypothesized that changes in ED visits, hospital stays, or clinical outcomes would be observed.

Key Data Sources

A brief description of key data sources used in conducting this evaluation is provided below. Additional detail about many of these data sources is available in the appendixes noted in the list:

- *Census data:* Census tract-level characteristics (e.g., household poverty in census tract) derived using 2005–2009 data from the American Community Survey
- *Medicare claims and enrollment files:* Medicare Parts A and B claims data on each beneficiary and enrollment data for every beneficiary who has at least one visit to a demonstration or comparison FQHC
- *Medicaid Analytic eXtract (MAX and Alpha-MAX) files*: Person-level data files on Medicaid eligibility, service utilization, and payment information for all individuals with one or more Medicaid service in a given calendar year, covering the period November 2010 through October 2013; see Appendix C, Section on Medicaid Analyses
- *CMS payment data:* The quarterly care management fees paid by CMS to each FQHC participating in the demonstration were provided by CMS and its payment contractors
- *Site level characteristics*: As accumulated from a diverse set of data sources detailed in Appendix A6, Exhibit A6.1, and Appendix B, Exhibit B.1
- *Attrition tracking:* Information on FQHCs that dropped out of the demonstration or on those that were excluded from the demonstration[16]

[16] Some FQHCs were excluded from the FQHC APCP Demonstration for no longer meeting demonstration requirements. Reasons for exclusion included not having enough Medicare beneficiaries, consolidating with another site, changing billing practices so that they were noncompliant, failing to complete the RAS, or closing/changing the FQHC's focus away from primary care. Other FQHCs withdrew from the demonstration independent of prompting

- *CMS Master Data Management:* This system for supporting enterprise-wide data services provided information for demonstration and comparison site FQHCs about FQHC level practice participation in CMS activities[17]
- *HRSA Uniform Data System*: Information on HRSA Section 330 grantees, including clinical measures, patient demographics, user visits, staffing, and accreditation
- *FQHC Characteristics of Demonstration and Comparison Sites*: As described in Appendix A6, Exhibit A6.1
- *Readiness Assessment Survey*: A biannual self-assessment completed by each demonstration FQHC that includes questions assessing the organization's progress toward becoming a PCMH and its NCQA PCMH recognition status; see Appendix A3
- *NCQA PCMH recognition status:* NCQA PCMH recognition level achieved by each demonstration and comparison FQHC, including the date recognition was achieved;[18] in addition, HRSA provided the date and type of medical home recognition achieved by FQHCs nationally
- *TA participation reports*: Data on each demonstration FQHC's exposure to and participation in training and other TA opportunities, as collected by AIR (October 8, 2014) and NCQA (June 6, 2014)
- *CASE surveys:* Self-reported data on demonstration site clinicians and staff at the end of the demonstration's second year and at the end of the demonstration's third (final) year; see Chapter Eight and Appendix A13
- *Beneficiary survey:* Self-reported data on Medicare beneficiaries attributed to demonstration or comparison FQHCs near the end of the demonstration's second year and at the end of the demonstration's third year; methods are described in Appendix D
- *Site leader and primary care association leader interviews and focus groups*: Qualitative data, including site and PCA experiences with the demonstration, TA components that appeared more and less helpful to sites, and challenges in the ability of sites to engage in TA and to achieve PCMH transformation and recognition, as obtained through interviews with 20 demonstration and ten comparison site leaders, as well as interviews with state PCA leaders from six PCA regions and PCA focus groups, at two points in time; see Chapter Four, Appendix A2 and Appendix A5
- *Site leader and primary care association leader interviews and focus groups*: Qualitative data, including site and PCA experiences with the demonstration, TA components that appeared more and less helpful to sites, and challenges in the ability of sites to engage in

---

by CMS. While some FQHCs did not provide a reason, the most frequent reason provided by FQHCs that did withdraw was that the FQHC decided to pursue type of PCMH recognition other than NCQA PCMH recognition.

[17] Examples of FQHC level practice participation in CMS activities include participation in CMS's Multi-Payer Advanced Primary Care demonstration, the Medicare Shared Savings Program, and the Pioneer Medicare Health Care Quality Demonstration).

[18] NCQA recognition data for demonstration FQHCs was made available to RAND from CMS's contractor (Truven). This was supplemented by NCQA recognition data for both demonstration and comparison FQHCs that was made available to RAND by HRSA.

TA and to achieve PCMH transformation and recognition, as were obtained through interviews with 20 demonstration and ten comparison FQHC site leaders, as well as interviews with state PCA leaders from six PCA regions and PCA focus groups, at two points in time; see Chapter Four and Appendixes A2 and A5.

1.4. Organization of This Report

The remainder of this report is organized into four sections:

Key Policy Question 1 (Chapters Two Through Eight)

- Chapter Two looks at the achievement of NCQA Level 3 PCMH recognition, and, to a lesser extent, other forms of PCMH recognition.
- Chapters Three and Four examine the use of funding and TA in the pursuit of PCMH recognition, while Chapter Five considers the predictors of PCMH recognition and Chapter Six looks at the pathways to recognition.
- Chapter Seven focuses on general change management and PCMH-related practice change management, while Chapter Eight examines results from the CASE survey.

Key Policy Question 2 (Chapters Nine Through Eleven)

- Chapters Nine and Ten present the results of our analyses estimating the impact of the demonstration on beneficiary processes of care and outcomes.
- Chapter Eleven reports the results of our mediation analyses, which estimate the impact of achieving PCMH recognition on beneficiary processes of care and outcomes.

Key Policy Question 3 (Chapters Twelve through Fourteen)

- Chapters Twelve, Thirteen, and Fourteen present results of our analyses of the "medical home effect" on beneficiary processes and outcomes. These chapters examine whether beneficiaries attributed to FQHCs that achieved medical home recognition (regardless of whether the FQHC was a demonstration or comparison site) had different outcomes than beneficiaries attributed to FQHCs that received no recognition.

Continuing Transformation and Conclusions

- Chapter Fifteen describes the intensity of change and continuing transformation even after sites have attained recognition.
- Chapter Sixteen presents the conclusions of our evaluation.

A summary of methods and updates to them is presented in three separate volumes of appendixes.

KEY POLICY QUESTION 1

In the next eight chapters, we address issues related to Key Policy Question 1: *What are the effects of the FQHC APCP Demonstration on practice structure and medical home recognition?*

We begin by taking a high-level view of the extent to which demonstration and comparison FQHCs were successful in becoming PCMHs by the end of the demonstration period (Chapter Two).

We then take a closer look at the factors that can influence sites' abilities to achieve PCMH transformation. In Chapters Three and Four, we look at sites' use of funding, TA, and feedback reports, examining the sources of support that were available to demonstration and comparison sites, which supports were used, and how.

In Chapters Five and Six, we dig deeper into the results of our analyses to understand why some sites achieved PCMH recognition and others did not. Chapter Five focuses on the predictors of medical home recognition, using quantitative and qualitative indicators of PCMH structural change. Chapter Six provides qualitative analyses of the pathways to recognition, analyzing the motivation and stages of adoption in attaining recognition over time. It concludes with a qualitative comparative analysis examining key influences and dynamics in the pathways toward attaining—or not attaining—NCQA Level 3 PCMH recognition.

Chapters Seven and Eight focus on practice changes involved in PCMH transformation. Chapter Seven looks at change management challenges and facilitators, while Chapter Eight examines provide and staff experience of change.

2. Medical Home Recognition

We begin our discussion of Key Policy Question 1 by considering the extent to which demonstration and comparison FQHCs were successful in becoming PCMHs, as measured by NCQA Level 3 PCMH recognition—the main site-level outcome that CMS anticipated from the demonstration. All FQHCs that submitted applications by the end of the demonstration on October 31, 2014, were given their final recognition level by December 31, 2014. Throughout this report, we use the term *NCQA Level 3 PCMH recognition* to indicate FQHC achievement of Level 3 recognition to the NCQA 2011 standards (as required by the FQHC APCP Demonstration). While FQHCs participating in the demonstration made a commitment to CMS to attempt to achieve NCQA Level 3 recognition by the end of the demonstration, many FQHCs and organizations that support FQHCs define medical home recognition in other ways. Therefore, where feasible and useful, our evaluation also considered the extent to which sites attained recognition through the NCQA, AAAHC, Joint Commission, or individual state recognition systems.

The results presented in this chapter will establish the foundation for six chapters to follow. These chapters look at the use of PCMH funding, TA, and feedback reports on the path to recognition (Chapters Three and Four), the factors associated with and pathways to recognition (Chapters Five and Six), and change management barriers and facilitators as well as provider and staff experience of change (Chapters Seven and Eight).

We begin by briefly looking at the percentage of demonstration FQHCs that achieved NCQA recognition, as well as trends in NCQA recognition for both demonstration and comparison sites. Next, we look at the percentage of demonstration and comparison sites attaining medical home recognition using multiple forms of recognition, including NCQA, AAAHC, Joint Commission, and individual state recognition. Finally, we discuss the relationship between PCMH recognition and PCMH transformation.

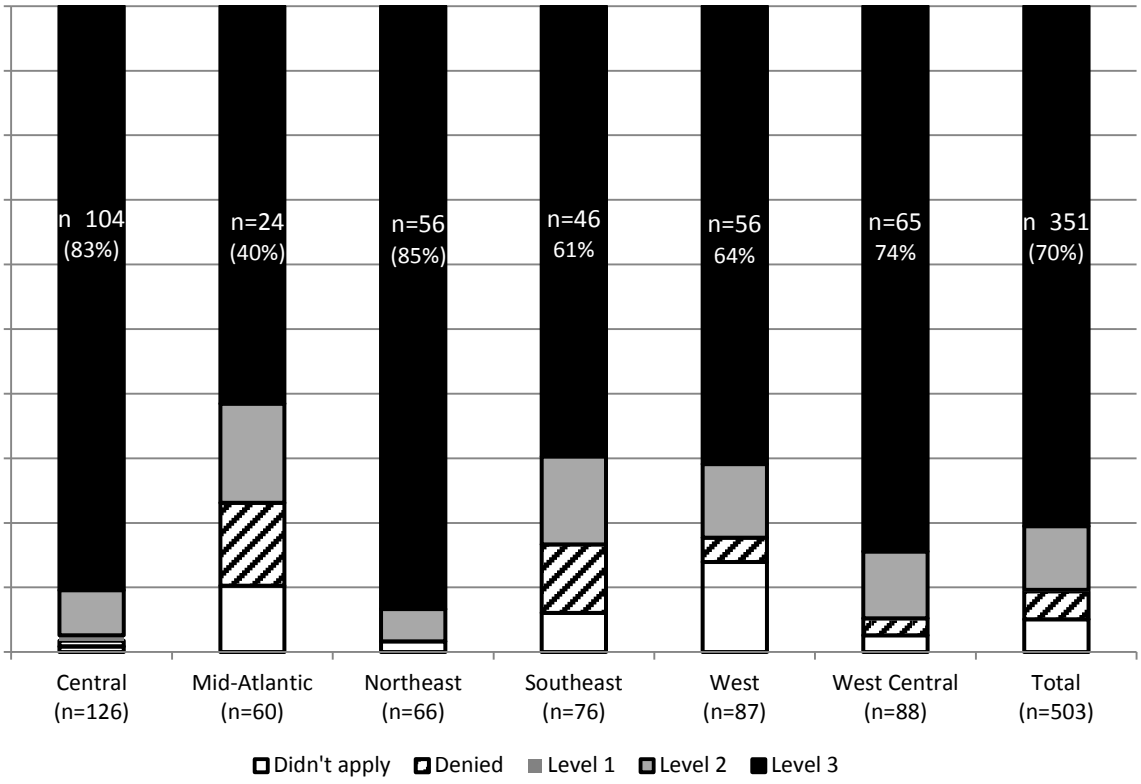
2.1. Progress Made by FQHCs Toward NCQA Level 3 PCMH Recognition

Exhibit 2.1 shows the final NCQA PCMH recognition levels achieved by demonstration sites. Overall, 70 percent (n=351) of 503 participating demonstration sites achieved NCQA Level 3 PCMH recognition by the end of the demonstration.[19] If we consider only those sites that

[19] Among the 351 participating demonstration sites that achieved NCQA Level 3 PCMH recognition, two sites were no longer participating in the demonstration by the time they received recognition. The evaluation analysis included these two demonstration FQHCs as recognized even though they dropped out of the demonstration before attaining recognition. This is consistent with the intention-to-treat analysis we used throughout the evaluation. In contrast, the implementation team included only recognized FQHCs that remained as demonstration participants.

remained through the end of the demonstration, 80 percent (n=349) of 434 still-participating demonstration sites achieved NCQA Level 3 PCMH recognition by the end of the demonstration. Regionally, the Northeast (85 percent) and Central (83 percent) clusters had the highest percentage of sites that achieved this recognition, while the Mid-Atlantic cluster (40 percent) had the lowest percentage. The Mid-Atlantic cluster also had the largest number of dropout sites (n=21, or 35 percent).

Exhibit 2.1. NCQA PCMH Recognition Level by Cluster by Demonstration End (n=503)

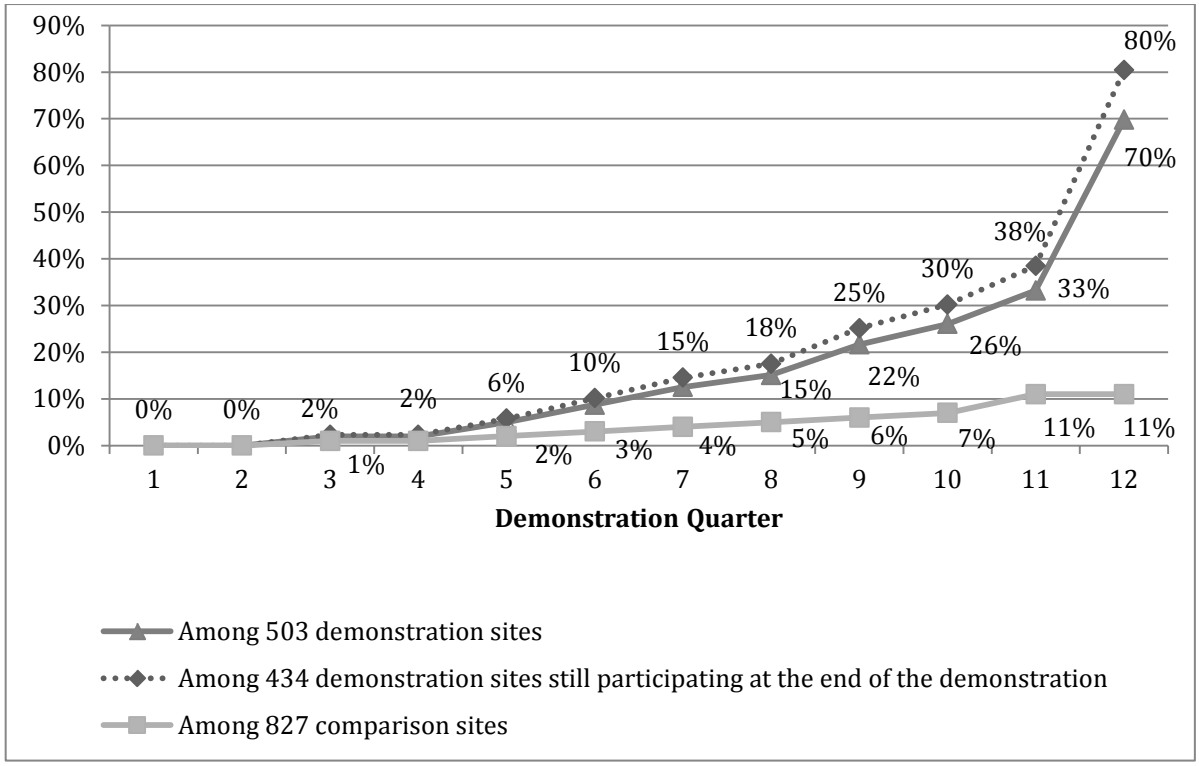


SOURCE: RAND analysis of CMS NCQA PCMH Recognition Status Data (final as of December 30, 2014).

Exhibit 2.2 shows the proportion of sites (both demonstration and comparison) achieving NCQA Level 3 PCMH recognition by each quarter of the demonstration. The number of sites achieving recognition increased steadily beginning in Quarter 4. The number of sites achieving NCQA Level 3 PCMH recognition rose sharply in the last quarter of the demonstration, as more than half of the sites that reached this milestone did so in Quarter 12. These results indicate that most demonstration sites that achieved NCQA PCMH Level 3 recognition did not have much time as fully functioning PCMHs during the demonstration and observation period of the evaluation in which to improve beneficiary processes and outcomes. We will discuss these issues further in the chapters related to Key Policy Question 2 (Chapters Nine through Eleven).

Exhibit 2.2 shows that comparison sites were much less likely to have obtained NCQA Level 3 PCMH recognition during the time period of the demonstration (only 11 percent did so). The number of sites achieving recognition increased only modestly between quarters.

Exhibit 2.2. Proportion of Demonstration and Comparison FQHCs That Achieved NCQA Level 3 PCMH Recognition, by Demonstration Quarter



SOURCES: NCQA, 2014a (compiled by Truven Analytics), for demonstration sites (n=503); HRSA, 2014, for comparison sites approaching the end of the demonstration's 12th quarter.

We used RAS data reported by demonstration FQHCs to assess sites' interim progress toward becoming a PCMH. These data were used by CMS to monitor participating FQHC's transformation progress. Details pertinent to RAS scores are shown in Appendix A3.

2.2. Progress Made by FQHCs in Achieving Other Forms of PCMH Recognition

While an important outcome of the demonstration was the proportion of FQHCs that achieved NCQA Level 3 PCMH recognition, many FQHCs and organizations that support FQHCs also define medical home recognition in ways other than by NCQA recognition.

The other forms of recognition examined in this report are:

- NCQA Level 1 and Level 2 PCMH recognition

- AAAHC medical home recognition[20]
- Joint Commission on Accreditation of Healthcare Organizations[21]
- State recognition programs, which in these analyses refer to the following: (1) the State of Oregon Patient-Centered Primary Care Home Program, and (2) State of Minnesota Health Care Homes (HCH) Program.

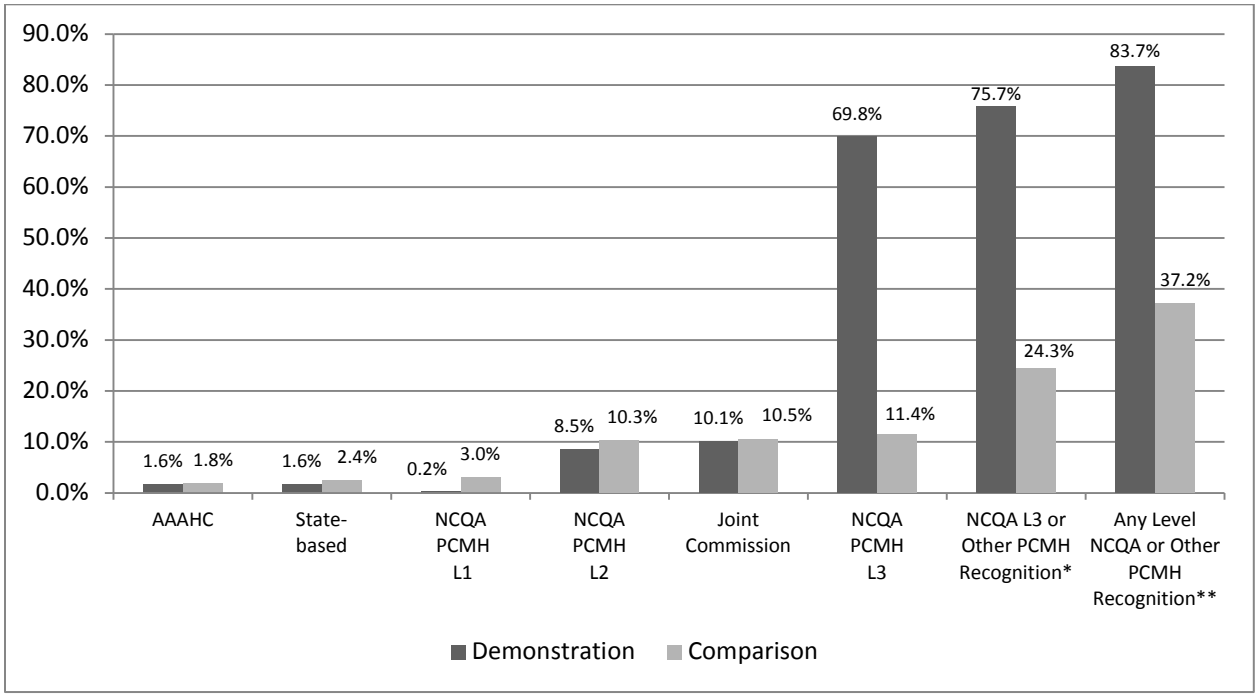
Additional information about the requirements of each program can be found in Appendix A1.

Exhibit 2.3 shows the percentage of demonstration and comparison FQHCs receiving PCMH recognition from the sources just listed. For demonstration sites, NCQA Level 3 PCMH recognition was the most prevalent type of recognition achieved, with 70 percent of sites achieving such recognition. This is consistent with the commitment made by demonstration sites to achieve NCQA Level 3 PCMH recognition in order to participate in the demonstration. For comparison sites, Joint Commission recognition was the most prevalent type (12 percent), with NCQA Level 3 PCMH recognition very close behind (11 percent). Very few sites from either group achieved AAAHC or state-based recognition during the demonstration. Across four types of PCMH recognition (NCQA Level 3 PCMH or recognition from AAAHC, Joint Commission or state-based recognition), 76 percent of demonstration sites and 24 percent of comparison sites achieved some form of PCMH recognition. Across six types of recognition (NCQA Level 1, 2, or 3 PCMH recognition or recognition from AAAHC, Joint Commission, or state-based recognition), nearly 84 percent of demonstration sites and just over 37 percent of comparison sites attained some level or form or PCMH recognition.

[20] The AAAHC offers both medical home onsite certification and medical home accreditation, which they consider forms of recognition. The criteria for these two forms of recognition are similar, though the accreditation is more comprehensive. This section summarizes the accreditation information (AAAHC, 2015).

[21] The Joint Commission offers several types of accreditation, but their program for medical homes is for certification (Joint Commission, 2014).

Exhibit 2.3. Percentage of Demonstration and Comparison FQHCs Achieving PCMH Recognition, by Source of Recognition



SOURCE: HRSA data received February 13, 2015. These data represent recognition attained through December 31, 2014.
NOTE: The first six pairs of bars represent the percentage of demonstration and comparison FQHCs that have achieved the specified recognition type.
* Bars labeled as NCQA L3 or Other PCMH Recognition represent the percentage of demonstration and comparison sites that have achieved either NCQA Level 3 PCMH recognition or AAAHC, state-based, or Joint Commission PCMH recognition. These bars do not include recognition with NCQA Level 1 or 2.
** Bars labeled as Any Level NCQA or Other PCMH Recognition represent the percentage of demonstration and comparison sites that have achieved either NCQA Level 3 PCMH recognition or any of the following types of recognition: NCQA Level 1 or Level 2, AAAHC, state-based, or Joint Commission PCMH recognition.

2.3. Relationship Between PCMH Recognition and Practice Transformation

Although the FQHC APCP Demonstration and evaluation focused on NCQA Level 3 PCMH recognition as a main indicator of medical home transformation, achieving recognition and achieving transformation are not synonymous. Indeed, while the intended purpose of PCMH recognition, as well as the NCQA recognition process in particular, was to stimulate practice transformation, demonstration site and primary care association (PCA) respondents described ways in which the PCMH recognition process sometimes had unintended consequences for practice transformation, as well as facilitators and strategies for mitigating these consequences. Here we briefly review these themes from the qualitative interview and focus group data.

Additional qualitative detail on the relationship between PCMH recognition and practice transformation can also be found in Appendix A4.

Site leaders and TA providers generally acknowledged the intended capacity of PCMH recognition to stimulate practice transformation, particularly by "forcing conversations" on a site's model of care, "streamlining and standardizing" policies and procedures, and providing a "disciplined process" and "structure for transformation." As one respondent explained:

> NCQA recognition can be a tool or a method to help a practice in becoming a medical home . . . I mean, it forces you to look at, what do we do for after-hours access? What do we do in terms of helping patients set self-management goals? It kind of forces the conversation.

Yet the PCMH recognition process also had unintended consequences on PCMH transformation in some FQHCs, especially under certain conditions. Many of the same respondents noted ways in which the pursuit of PCMH recognition unintentionally detracted from practice transformation, by, for example, focusing extensively on documentation of policies and procedures—which could distract and change the dynamic from process improvement to a time-limited "checkbox" mentality.

Site respondents felt that time required to complete the extensive documentation requirements of the NCQA application process left insufficient time for implementing practice changes and transformation. As one PCA practice coach observed, coaches often ended up spending time proofreading policy rather than seeking opportunities to transform care. Similarly, a site respondent commented:

> The team was passionate about PCMH and really could have been doing more hands-on change work with our clinical teams. Our providers and our staff could have been doing training, but we were all working on paperwork. . . . literally, 600 documents that I had to submit to NCQA, I had to stop doing a lot of the quality improvement in order just to get paperwork together.

PCA leaders and practice coaches also perceived a rather loose association between levels or types of recognition and the degree of PCMH transformation. Many sites attaining Level 2 recognition appeared to undergo substantial transformation, and leaders of some of these FQHCs believed it might not be worth effort to try for NCQA Level 3, especially given the difficulty of certain NCQA standard requirements or questions about appropriateness of some requirements for particular FQHC settings.

Several conditions of sites and PCMH interventions, including site characteristics and orientation, were described as contributing to an unintended emphasis on recognition over transformation. Some PCA respondents said that a lack of site and leadership understanding of PCMH and the extent of transformation required occasionally resulted in overconfidence or an inaccurate self-conception of a site's own "PCMH-ness." PCA respondents also noted a small number of sites that were wholly motivated to achieve PCMH recognition by current or anticipated financial incentives, with little or no interest in actual practice transformation.

Some FQHC leaders also noted that the time pressure brought on by the demonstration's three-year deadline to achieve NCQA Level 3 PCMH recognition could cause sites to emphasize recognition over transformation. Some site respondents mentioned interim deadlines as well (e.g., the requirement experienced by many demonstration sites to submit for NCQA Level 1 PCMH recognition for the HRSA cervical cancer grant). These deadlines often created a short-term halt in change and implementation efforts as respondents shifted to creating and filing the paperwork required to submit application materials in time.

Sites' efforts to address these and other challenges related to the NCQA recognition process will be discussed further in Chapter Seven and Eight. We will return to the topic of remaining transformation in Chapter Fifteen.

2.4. Chapter Summary and Conclusion

In this chapter, we highlighted progress made by FQHCs in attaining PCMH recognition during the demonstration period. Our main findings are as follows:

- Overall, 70 percent (n=351) of 503 demonstration sites achieved NCQA Level 3 PCMH recognition by the end of the demonstration; more than half the demonstration FQHCs that achieved recognition did so during the final quarters of the demonstration.
- These results indicate that the majority of demonstration sites that achieved NCQA Level 3 PCMH recognition did not have a lot of time functioning as PCMHs during the demonstration in which to improve beneficiary processes and outcomes.
- For demonstration sites, NCQA Level 3 PCMH recognition was by far the most prevalent type of recognition achieved, with 70 percent of sites achieving Level 3 PCMH recognition through this pathway. For comparison sites, Joint Commission recognition was most prevalent (12 percent), with NCQA Level 3 PCMH recognition very close behind (11 percent).
- Although PCMH recognition is intended to stimulate practice transformation, site leaders and TA providers noted ways in which recognition unintentionally detracted from practice transformation at some sites, such as by encouraging a focus on documenting policies and procedures rather than process improvement, particularly due to time pressures from recognition deadlines.

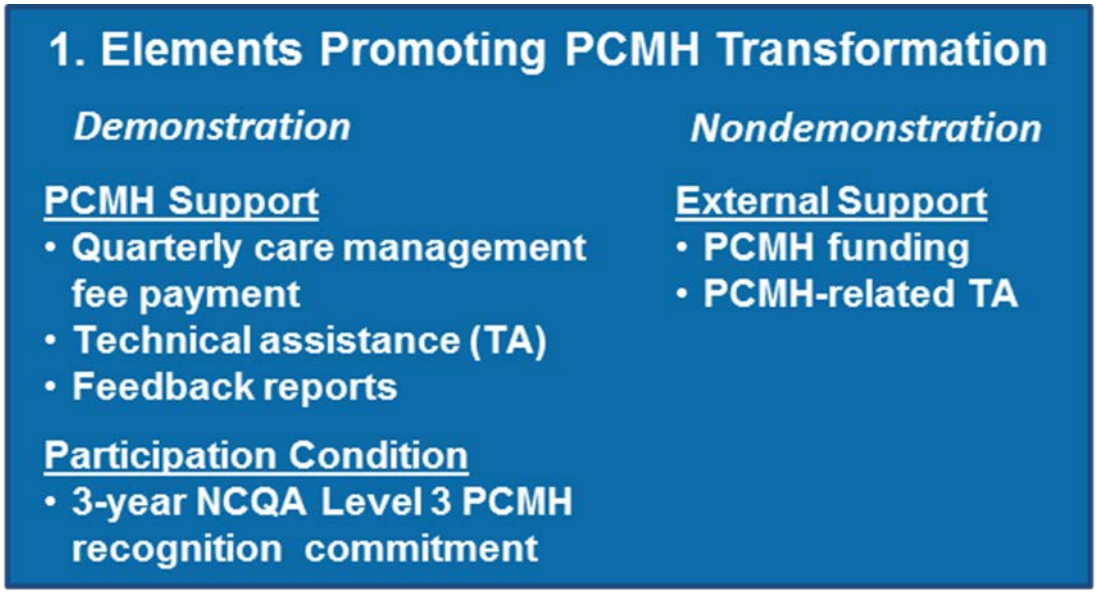
In the next two chapters, we will look more closely at FQHCs' use of demonstration and other PCMH supports, including funding (Chapter Three), TA (Chapter Four), and feedback reports (Chapter Four).

3. FQHC Use of Demonstration Funding and Other Financial Resources to Support PCMH Recognition

Building upon the results presented in the previous chapter, we now begin to look more closely at the factors that supported FQHCs' efforts to achieve PCMH recognition. To understand the effects of the intervention components designed to support the achievement of NCQA Level 3 PCMH recognition, we examined the use of financial resources (in the current chapter) and TA (in Chapter Four), as well as the factors associated with PCMH recognition (Chapter Five).

FQHC APCP Demonstration sites received PBPQ care management fee payments from CMS for each eligible Medicare beneficiary attributed to participating FQHCs. In addition, both demonstration and comparison sites had access to nondemonstration financial resources, including payments from HRSA and state Medicaid programs, to support the achievement of PCMH recognition. The material covered in this chapter corresponds to the upper left box (Box 1) in the conceptual framework shown in Exhibit 1.2. For convenience, the intervention components to enhance FQHCs are shown in Exhibit 3.1.

Exhibit 3.1. From the Conceptual Model: Interventions to Enhance FQHCs



We begin by discussing PBPQ care management fee payments to demonstration sites and how sites used these funds. We then discuss other sources of funds available to both demonstration and comparison sites and how sites used these funds.

Throughout the chapter, we highlight findings from both quantitative and qualitative analyses. More detail on the qualitative methods appears in Appendix A2. Additional supporting detail from the qualitative analyses appears in Appendix A5.

3.1. Demonstration Care Management Fee Payments

Exhibit 3.2 shows the total paid per quarter across all demonstration sites, as well as the average payment per site and the total number of beneficiaries in the demonstration per quarter. Total demonstration care management fee payments ranged from $3,883,356 in Quarter 7 to $3,376,080 in Quarter 10. The lower value reflects fluctuations in the number of attributed Medicare beneficiaries as well as attrition among demonstration FQHCs; sites no longer participating in the demonstration no longer received these payments. Total payments across FQHCs averaged about $3.8 million per quarter, while payment per FQHC averaged $7,844 per quarter for the duration of the demonstration.

Exhibit 3.2. Medicare PBPQ Care Management Fee Payments to Participating FQHCs

Demonstration Quarter	Total Payment	Number of Demonstration Sites at Start of Quarter	Average Payment per Site	Total Number of Beneficiaries in Demonstration
1	$3,721,356	500	$7,442.71	206,742
2	$3,847,122	500	$7,694.24	213,729
3	$3,840,408	499	$7,696.21	213,356
4	$3,865,662	492	$7,857.04	214,759
5	$3,863,070	493	$7,835.84	214,615
6	$3,880,134	491	$7,902.51	215,563
7	$3,883,356	490	$7,925.22	215,742
8	$3,861,702	482	$8,011.83	214,539
9	$3,754,242	476	$7,887.06	208,569
10	$3,376,080	473	$7,137.59	187,560
11	$3,851,370	467	$8,247.04	213,965
12	$3,727,332	439	$8,490.51	207,074
SUM	$45,471,834	500*	$94,127.81	2,526,213

SOURCE: CMS payment data, 2014. These numbers were confirmed by the CMS implementation team as of July 11, 2016.

*The value of 500 in this row represents the maximum number of sites in the demonstration in a given quarter.

NOTE: One Provider Transaction Access Number (PTAN) had errors in its roll-up of codes that led to extreme outliers in care management fee payment amounts for Quarters 9–12. Research into this site revealed that it was incorrectly rolling up payments from other sources into the total, but we were unable to obtain correct amounts for the true total payment from the demonstration in those quarters, so these data include the total amount paid to that site in each quarter.

Demonstration Site Use of PBPQ Care Management Fee Payments

We used qualitative data from interviews with site leaders at demonstration FQHCs to explore how demonstration sites used the demonstration care management fee payments to support their efforts to achieve NCQA Level 3 PCMH recognition. Sites had broad discretion over how to spend these funds. We interviewed site leaders in the first and final years of the demonstration and asked about how their clinics were using or planning to use the care management fee payments.

Site respondents said they thought that care management fee payments were typically used to support additional staffing (e.g., case managers, referral coordinators), EHR modifications, staff education and training, and patient informational materials (e.g., flyers, brochures) related to implementation of PCMH changes. One respondent stated: "[The funding was useful to] support the electronic health record, support any flyers, brochures, things that were beneficial to maintain the staffing levels that we have, and make sure that those were available." Several leaders of multisite grantee units noted that their sites used funds to support the grantee-level system changes necessary to facilitate PCMH transformation efforts across their clinics.

Most site interviewees were clinical and operational leaders responsible for PCMH practices who generally did not know the exact amounts and allocations of the care management fee payments. Although site leaders knew that their sites had received financial incentives because of the demonstration, analyses did not reveal a consistent pattern in how the care management fee payments were used by participating FQHCs. More than half of the demonstration site respondents stated outright that they were unaware of the details surrounding the use of the care management fee payments. Only two claimed to know the exact amount of funding received.

Demonstration site respondents valued the care management fee payments, particularly for supporting certain PCMH changes and implementation efforts. In addition, several FQHC respondents mentioned that care management fee payments, beyond their financial value, helped justify the organization's participation in the FQHC APCP Demonstration and support of PCMH changes and expenditures to both leaders and staff. Noted one site leader: "I don't really know the full financial impacts of [the payments], but I will say that the enhancement in payment was recognized by the [chief financial officer], so I do think that . . . was a good stimulus or incentive for allowing us to be able to expand our patient care specialist role and to expand center hours."

Adequacy of the Demonstration's Financial Incentives

We asked demonstration site personnel about the adequacy of the care management fee payments. Although site respondents valued the payments, the amount of funding provided by the demonstration was considered small and generally insufficient to cover PCMH implementation. Multiple interviewees noted that transformation costs typically accrued across the multiple sites that compose an FQHC grantee unit, while care management fee payments were based only on the number of Medicare beneficiaries attributed to the individual FQHC(s)

that participated in the demonstration. Furthermore, interviewees noted that the demonstration's care management fee payment was based on the number of Medicare beneficiaries attributed to the demonstration site, while the financial resources needed to transform their clinics spanned all (not only Medicare) patients. Medicare beneficiaries amounted to an average of 8 percent of all HRSA-funded health center patients.[22]

Respondents reported having to make substantial investments in PCMH changes from their own outlays. Sites were willing to make such investments initially to support change, but emphasized the need for payment models that would sustain the PCMH model over time. More generally, respondents felt that future changes to reimbursement systems would be needed to sustain PCMH models of care.

3.2. Other Sources of PCMH-Related Funding Received by Demonstration Sites

Many demonstration FQHCs reported receiving other sources of funding external to the demonstration to support NCQA Level 3 PCMH recognition. These sources included HRSA, state Medicaid programs, Medicare accountable care organizations (ACOs), and private managed care organizations and commercial insurers.

HRSA Funding

The HRSA funding was the most substantial source of nondemonstration funding and consisted of various grants covering:

- PCMH recognition fees (both NCQA and other recognition systems)
- additional staffing (e.g., behavioral health providers, IT analysts)
- facility improvements (e.g., new facilities designed around patient-centered and team-based principles)
- other expansions in service and access to care (e.g., through the Affordable Care Act [ACA])
- care management and prevention for specific conditions, some of which also included requirements for PCMH recognition (e.g., for cervical cancer screening)
- increases to annual FQHC base grants for PCMH recognition (including, but not restricted to, NCQA recognition).

While HRSA's increases to annual base grants to FQHCs did not generally restrict the use of funds, other sources of HRSA funding tended to be restricted to specific uses (e.g., additional

[22] The 8-percent figure is based on 2012 HRSA national health center statistics, which include data for HRSA grantees, but not for FQHC Look-Alikes (HRSA, 2014). Look-Alikes are organizations that meet all of the eligibility requirements of the HRSA Health Center Program, but do not receive Health Center Program funding,

behavioral health staffing, new facility construction, case management for specific conditions). Overall, 58 percent of demonstration clinics (n=292 of 503) participated in the HRSA PCMH Initiative. Site respondents described ways in which they used HRSA funding, as shown in Exhibit 3.3 below.

State Medicaid and Federal Medicare ACO Programs

Demonstration sites in one state in our interview sample (New York) reported receiving funds from State Medicaid and Federal Medicare ACO programs. The amount of PCMH-related funding provided through the New York State Medicaid program (i.e., $6 per enrollee per month) was similar to the $18 PBPQ care management fee payment in the FQHC APCP Demonstration. However, there were some differences. The Medicaid programs paid the care management fee only to FQHCs that achieved NCQA Level 3 recognition, while the demonstration made care management fee payments to all participating demonstration FQHCs. Another difference was that the New York State Medicaid program paid the per-member-per-month (PMPM) figure for all attributed Medicaid beneficiaries, while the FQHC APCP Demonstration paid the PBPQ amount for all attributed Medicare beneficiaries.

While each demonstration applied different criteria before providing the care management fee payments, several site leaders expressed awareness that a fee payment based upon their entire patient load, regardless of their patients' insurance status, would allow them to advance their PCMH transformation goals.

Private Funders

FQHCs reported a variety of enhanced payment programs from private managed care plans and commercial insurers for PCMH recognition and PCMH-related performance metrics. These included Blue Cross/Blue Shield plans in some states, as well as other managed care plans. These programs imposed various measurement and reporting requirements and were considered to provide modest additional funding. One respondent explained that many managed care plans were interested in developing formal relationships with medical homes but expected additional resources to be provided by the FQHC.

Summary of Nondemonstration Financial Supports Used by Demonstration Sites

Exhibit 3.3 summarizes the PCMH financial supports used by FQHC APCP Demonstration sites as well as site respondents' views about their uses and value, which we illustrate with selected comments from our site interviews. Additional detail on financial supports described in the interviews can be found in Appendix A5.

Exhibit 3.3. PCMH Financial Supports Used by FQHC APCP Demonstration Sites, as Reported by Site and PCA Leader Interviews

PCMH Support Interventions	Most-Useful Supports Reported	Other Supports and Uses Reported	Additional Detail on Use of Support Interventions	Illustrative Quotations from Respondents
APCP enhanced Medicare PBPQ care management fee payments	• Generally valued by site PCMH leads • Most helpful uses of payments reported by sites included support for: - New and expanded care team roles - Education and training on PCMH changes and new care practices - General support for PCMH implementation, "putting systems in place"	• Additional clinical staffing for extended hours • Support for PCMH lead/coordinator role • IT support for PCMH-related EHR changes, care documentation, and reporting • Self-management and other PCMH patient tools and materials	• For most demonstration sites, additional revenue from care management fee payments was modest, given relatively small proportion of Medicare patients • Care management fee payments were generally insufficient to cover PCMH implementation and, in some cases, less than site investments in PCMH • Beyond the amount of funding, several sites mentioned the value of care management fee payments in helping justify participation in the demonstration and the FQHCs' own investment in PCMH changes • Changes to future reimbursement systems were considered necessary to sustain PCMH model of care over time	"[The funding] wasn't that significant in terms of affecting our overall budget and corporation. It was kind of absorbed, because we spent more than that putting all these things in order and the time that it took slowing down visits, training physicians/nurses, putting systems in place, working on software." "I mean, [the funding's] definitely helpful. [But our] Medicare population at the site that's participating in the project is fairly small, so it's not as if it changes our bottom line significantly." "The [demonstration] project is for one of our smaller sites, but any meaningful PCMH changes that we make in the practice really have to be rolled out to all of our sites for them to be sustainable . . . Otherwise it all sort of falls apart."
Nondemonstration financial supports	• HRSA most substantial nondemonstration funding source - Various grants to cover PCMH	• Private managed care organizations and insurers • Medicare ACOs (not PCMH-related per se, but	• Sites that received state Medicaid program funding reported it a more substantial source than care management fee	"Through the [HRSA] 330 grant, we have received $55,000 focusing on cervical cancer. And so it allowed us to hire one [full-time equivalent] care coordinator

PCMH Support Interventions	Most-Useful Supports Reported	Other Supports and Uses Reported	Additional Detail on Use of Support Interventions	Illustrative Quotations from Respondents
	recognition fees, expanded access and staffing, facilities improvements, care management for specific diseases, and increases in annual base grants • State Medicaid program funding for PCMH	similar goals and strategies)	payments due to higher numbers of Medicaid patients served by the FQHC • Private managed care and insurer incentives for PCMH imposed different sets of requirements, but provided relatively little additional funding	in the Quality Department to focus on gaps in care, which include working with cervical cancer initiatives." "We hired a full-time licensed medical social worker on staff, and we have a slot for another. And the collaboration will expand when we get to the new building, because then we'll have . . . all the services right there. We got a grant that added the behavioral health from HRSA. So it's mostly just applying for grants and getting them. . . . We got another small amount of money from HRSA for PCMH . . . we did the cervical cancer one, too. [And] we just got a base grant adjustment that included $25,000, because we were PCMH-recognized. Everybody got a base grant adjustment, but you also got an additional $25,000 if you achieved . . . recognition."

SOURCE: RAND qualitative analyses.

3.3. Funding Received by Comparison Sites to Support NCQA Level 3 PCMH Recognition

Comparison sites were not eligible for the enhanced care management fee payments provided to demonstration sites. However, other than the care management fee payments, there were no systematic differences in PCMH-related funding between demonstration sites and comparison FQHCs (see Exhibit 3.4). Comparison FQHCs in our interview sample reported three main sources of funding for PCMH efforts, all of which were also reported as nondemonstration funding sources by demonstration FQHCs:

- HRSA—also the most widely acknowledged PCMH funding source for comparison sites
- state Medicaid and health department programs
- private managed care organizations.

Two comparison sites also reported receiving small amounts of local funding for PCMH-related efforts, from university grants and county health funds respectively. Exhibit 3.4 compares financial supports used by FQHC APCP Demonstration and comparison sites.

Half of the comparison sites reported receipt of HRSA funding through a variety of grant mechanisms, including grants for PCMH recognition fees (both NCQA and others, such as AAAHC), care management and prevention for specific conditions (such as for cervical cancer, which also required PCMH recognition), and increases in FQHC annual base grants for PCMH recognition. Similar to demonstration sites, comparison sites used HRSA grant funding to cover such expenses as PCMH recognition fees and care management for specific diseases. However, in contrast to demonstration FQHCs in the interview sample, none of the comparison sites mentioned using HRSA grants for additional staffing (e.g., behavioral health or dental), facility improvements (e.g., new clinic buildings), or expanded access, at least not as related to PCMH efforts.

As with demonstration FQHCs, state Medicaid funding was reported by a site in only one state (New York) out of the six states in the interview sample. This site respondent also mentioned a separate state Department of Health grant for PCMH implementation, which the site used for IT infrastructure. Sites in both New York and New Mexico reported PCMH funding from private Medicaid managed care organizations. In New York, the managed care organization (MCO) was following the reimbursement policies of the state Medicaid program. In New Mexico, the site received a small grant from a Medicaid MCO to participate in the MCO's own PCMH program, which entailed providing the MCO with specific care and quality data, and ensuring follow-up on emergency department/hospital visits for the MCO's panel of patients.

One demonstration FQHC site leader reported receiving a grant from a local university to hire a nurse whose main role would be to help the site attain PCMH recognition. Another comparison FQHC reported receiving modest funding from a local county health care fund to support access to hospital and specialist providers.

Exhibit 3.4. PCMH Financial Supports Used by Demonstration and Comparison Sites, as Reported in Site and PCA Leader Interviews

PCMH Support Interventions	FQHC APCP Demonstration Sites	Comparison Sites
APCP enhanced Medicare PBPQ care management fee payments	• Received by all demonstration sites • Typical reported uses included: - New and expanded care team roles - Education and training on PCMH changes and new care practices - General support for PCMH lead/ coordinator, implementation team - Additional clinical staff for extended hours - EHR modifications and IT support for PCMH	• Not available to comparison sites
HRSA	• Largest nondemonstration funding source • Various grants to cover PCMH recognition fees, expanded access and staffing, facility improvements, care management for specific diseases, and increases in annual base grants	• Also most widely acknowledged source of PCMH funding for comparison sites • Similar sets of grants reported
State Medicaid programs	• Only reported by sites in one (out of six) states in the qualitative sample • PMPM similar to rate provided by APCP care management fee payments, but more substantial due to higher number of Medicaid patients	• Same as FQHC APCP Demonstration sites
Private managed care organizations and insurers	• Variety of PCMH-related programs • Impose different sets of requirements, but provide relatively little additional funding	• Same as FQHC APCP Demonstration sites
Miscellaneous funding sources	• Medicare ACOs reported by two sites (not PCMH-related per se, but similar goals and strategies)	• Variety of local funding (university grant, county health fund), but no reason to indicate these sources not accessible to demonstration sites if available

SOURCE: RAND qualitative analyses.

Demonstration sites were significantly more likely than comparison sites to receive supplemental funding from ACA grants (50 percent versus 35 percent, $p < 0.01$), HRSA PCMH Initiative funding (58 percent versus 34 percent, $p < 0.01$), participation in other CMS demonstrations (20 percent versus 15 percent, $p < 0.05$), and PCMH supplemental funding (94 percent versus 68 percent, $p < 0.001$). [23]

[23] Examples of other CMS demonstrations include Pioneer, Medicare Shared Savings Plan, and the North Carolina 646 Demonstration. PCMH supplemental funding is a one-time only $35,000 (fiscal year [FY] 2011) grant designated to facilitate PCMH transformation by enhancing access to care, patient flow redesign, care planning, support for team-based models of service delivery, and necessary systems upgrades.

Comparison sites were more likely than demonstration sites to be an American Recovery and Reinvestment Act (ARRA) grantee (71 percent versus 64 percent).[24]

Demonstration and comparison sites did not differ with respect to Beacon supplemental funding, Health Center Controlled Networks (HCCN) grants or Safety Net Medical Home Initiative (SNMHI) participation.[25]

3.4. Chapter Summary and Conclusion

In this chapter, we described the use of financial resources by FQHCs (both demonstration and comparison) to support their movement toward achieving NCQA Level 3 PCMH recognition. Financial resources provided a foundation for clinic transformation.

- Total demonstration care management fee payments to demonstration FQHCs ranged from $3,915,738 in Quarter 2 to $3,590,388 in Quarter 12.
- Total demonstration care management fee payments ranged from $3,883,356 in Quarter 7 to $3,376,080 in Quarter 10. Total payments across averaged about $3.8 million per quarter, while average payment per FQHC remained around $7,844 per quarter for the duration of the demonstration.
- Demonstration site leaders reported that care management fee payments were typically used to support additional staffing, EHR modifications, staff education and training, and patient informational materials related to implementation of PCMH changes.
- Demonstration FQHCs reported several additional sources of PCMH funding external to the FQHC APCP Demonstration, including HRSA, state Medicaid programs, Medicare ACOs, private managed care organizations, and commercial insurers. Of these, HRSA's contribution was most significant and was used for PCMH recognition fees, additional staffing, facility improvements, other expansions in service and access to care, care management and prevention for specific conditions, and increases to annual FQHC base grants for PCMH recognition.
- Demonstration site respondents generally valued the demonstration care management fee payments, but considered the amounts small. Site respondents typically viewed funding from the demonstration, which was provided only for Medicare beneficiaries and only in FQHCs that participated in the demonstration, as insufficient to cover the full costs of PCMH transformation for all patients across the entire FQHC organization.
- Although comparison sites were not eligible for the demonstration enhanced care management fee payments provided to demonstration sites, demonstration and

[24] Using funds provided through the ARRA.

[25] FQHC grantees that operated at least one site within a Beacon Community Program service area were eligible for supplemental funding from HRSA to support their participation in the Beacon Community Program. HRSA funds HCCN to improve the quality of care through local collaborations of safety-net providers using strategies centered on the use of health information technology. The SNMH Initiative was a five-year demonstration to transform safety net sites into PCMHs.

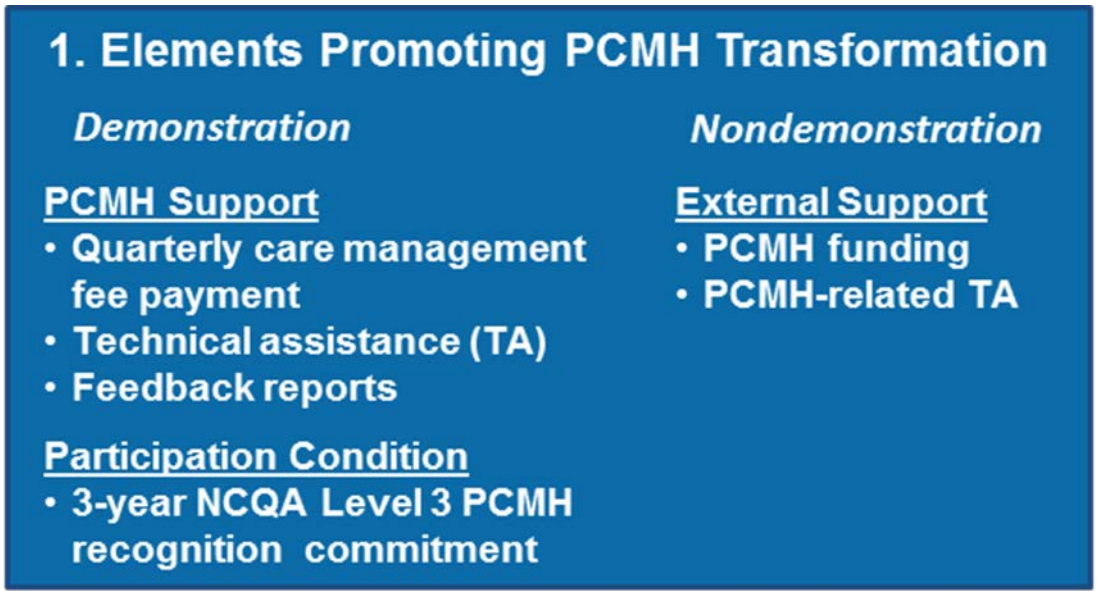
comparison sites had access to the same external funding sources to support PCMH recognition.

Financial supports were one component of the intervention; TA and feedback reports were the other components. In the next chapter, we examine the use of TA supports and feedback reports provided through the demonstration, as well as the use of other TA from nondemonstration sources.

4. FQHC Use of Technical Assistance and Feedback Reports to Support PCMH Recognition

In this chapter we examine the role of two other types of PCMH support provided by CMS's demonstration: (1) TA provided by the NCQA and AIR—the latter including state PCAs and Qualis; and (2) data and performance feedback reports. As with the discussion of PCMH-related funding in the previous chapter, the topics covered in this chapter correspond to Box 1 in our conceptual framework in Exhibit 1.2 in Chapter One (reproduced here as Exhibit 4.1).

Exhibit 4.1. From Our Conceptual Model: Interventions to Enhance FQHCs



Demonstration TA supports were intended to facilitate practice change and PCMH recognition. Both demonstration and comparison sites also had access to additional nondemonstration TA to support PCMH recognition. These forms of assistance included TA from NCQA, HRSA, PCAs, and other sources.

Feedback reports provided FQHCs with data on PCMH recognition level and trends, claims-based utilization and quality of care measures, and beneficiary outcomes (e.g., cost, utilization, and health). Feedback reports were intended to give participating FQHCs an opportunity to monitor their progress. Biannual NCQA RAS reports provided FQHCs with current site-level NCQA PCMH recognition-level and overall score trends. Quarterly cost and utilization data reports provided site-level claims-based utilization measures (e.g., inpatient admissions, ED visits), Medicare expenditure summary data (e.g., average total Medicare expenditure per beneficiary), and quality of care measures (e.g., HbA1c testing, retinal eye exams, LDL

screening, and nephropathy testing rates among beneficiaries with diabetes). Quarterly claims-based beneficiary-level reports provided identifiable beneficiary data summarizing key outcomes for beneficiaries attributed to the FQHC (e.g., cost, utilization, health data).

We begin this chapter by discussing the various forms of TA used by demonstration sites, starting with components of the intervention. We then consider other forms of TA outside the intervention. Finally, we discuss sites' use of feedback reports.

Throughout the chapter, we highlight findings from both quantitative and qualitative analyses. More detail on the qualitative methods appears in Appendix A2. Additional supporting detail from the qualitative analyses appears in Appendix A5.

4.1. Technical Assistance

Overview of TA

Demonstration sites had several forms of TA available to support NCQA Level 3 PCMH recognition, including TA from NCQA, AIR, state PCAs, and Qualis. Many site respondents emphasized the importance of TA in providing knowledge and help in integrating multiple components of change strategies that are central to becoming a PCMH.

During interviews, demonstration site respondents emphasized two overarching themes related to TA. First, they valued TA, overall, as a means to help them chart a course of change and coordinate their efforts. FQHCs noted that the PCMH model requires coordination among many components of care and thus involves a number of challenges and facilitators, including the need to implement extensive structural change; the need to build a strong change team that is responsible for implementation; and the need to educate leaders, providers, and staff about the PCMH model and changes required. Sites looked to TA providers to assist with their course of change.

Second, TA was valued as a means of supporting the ongoing learning involved in PCMH transformation. Respondents emphasized the challenge of understanding the PCMH model thoroughly—including its comprehensiveness, core elements, and principles, as well as the relationship between PCMH recognition and transformation. Respondents noted that the extent to which site leaders and staff achieved such an understanding was a key factor in building a PCMH-supportive environment by facilitating leadership support, provider and staff buy-in, education about changes, and general readiness to implement the PCMH model.

Uptake of TA varied across types of TA and over time, as will be discussed later in this chapter, and so did coordination of TA sources. For example, PCA respondents mentioned problems with NCQA responsiveness during early 2014, when NCQA appeared overwhelmed with processing applications. In addition, the multiplicity of TA resources was confusing to many sites during the first 18 months of the demonstration, but became clearer in the second half of the demonstration with better communication and streamlining from national TA partners in

the demonstration. Site and PCA leaders observed that, over time, direct TA providers developed a collaborative working relationship and coordinated roles, particularly during the final year of the demonstration. Some also noted that they wished PCAs and Qualis TA had started sooner in the demonstration period.

Demonstration Sites' Participation in NCQA, AIR, and Qualis TA

Uses of NCQA TA

NCQA provided several forms of TA to demonstration sites. NCQA offered two webinars monthly during the demonstration—a two-part webinar on PCMH standards that reviewed the requirements for obtaining NCQA recognition, and a training webinar on use of the Interactive Survey System that sites use to enter their data for recognition. NCQA developed these webinars to facilitate FQHC demonstration sites' successful achievement of NCQA Level 3 PCMH recognition. A second type of TA offered by NCQA, with funding provided through HRSA, was the option for demonstration sites to participate in a mock survey. NCQA also conducted RAS audits for the demonstration sites, and provided one-on-one consultant visits to some sites. Truven Analytics, the implementation contractors for the demonstration, supported NCQA's webinars and provided data to RAND about webinar participation. Truven Analytics also supported NCQA by answering questions submitted by sites through email, but did not offer any direct TA to sites.

Most demonstration sites reported using some form of NCQA assistance, but did not consistently participate in the NCQA webinars.[26] More than two-thirds of FQHCs within each PCA regions did not participate in any of these webinars, and fewer than 10 percent of sites within any region attended all three types of webinars. (See Appendix A5 for more information on webinar attendance using data provided by CMS's contractor, RTI.)

Demonstration respondents emphasized the value of several forms of TA provided by NCQA. Respondents said the most useful forms of NCQA support focused on answering individual site inquiries and providing in-person training sessions. Illustrative quotations from respondents are provided in Exhibit 4.2. NCQA assistance typically was supplemental or for specific uses (although two sites reported NCQA as primary source of TA).

[26] At the start of the demonstration, NCQA and AIR described as important for successful achievement of Level 3 recognition FQHC participation in three NCQA webinars: PCMH Standards Part One and Two and the Interactive Survey System Training. Despite minimal participation by sites early in the demonstration, site participation began to increase by the middle of the second year, although it remained variable throughout the demonstration. By the 11th quarter of the 12-quarter demonstration, 68 percent to 90 percent of demonstration FQHC sites across six FQHC regions did not participate in any of the NCQA webinars. No region achieved webinar participation of more than 40 percent for any of NCQA's three training webinars. RAND's data source for this information was the NCQA TA Participation Lists, provided to RAND by Truven Analytics, June 11, 2014.

Demonstration respondents emphasized the value of several forms of TA provided by NCQA, including responses to individual site inquiries, in-person group training sessions attended by multiple sites, webinars, mock surveys, and other presubmission feedback (e.g., RAS audit), as well as reviewer and postsubmission feedback. The most useful forms of NCQA support, according to site respondents, were receiving answers to individual site inquiries and attending the in-person group training sessions.

Respondents whose sites had participated in the in-person group training sessions conducted by NCQA staff felt them to be helpful in orienting sites to the NCQA PCMH recognition model and requirements. Some sessions were provided outside the demonstration through NCQA's regular training offerings and were noted to be expensive. Other sites reported attending similar in-person trainings organized at the behest of a PCA.

Use of mock surveys through NCQA was reported by only one of the 20 sites that participated in the qualitative interviews; representatives of that site found it very helpful.

A few respondents reported using NCQA as a primary contact for TA questions. For example, one respondent noted, "Our PCMH lead has a direct line right now to NCQA headquarters." However, several site respondents noted that it sometimes took NCQA staff longer than expected to respond. In the words of one respondent, "I think that our NCQA contact person was very helpful, when she had the time for us." Responsiveness was particularly an issue, according to PCA respondents, during early 2014, when NCQA appeared overwhelmed with processing applications, but the level of support was said to improve later in the demonstration. Some PCA respondents also noted that the usefulness of NCQA responses varied depending on the specific consultant.

While site respondents mentioned the usefulness of webinars, they could not always distinguish between those conducted by NCQA and AIR, and so were unable in some cases to state clearly whether they found the NCQA webinars valuable.

Uses of AIR TA

CMS contracted with AIR to provide TA to demonstration sites; AIR, in turn, subcontracted with a consortium of national partners that included the National Association of Community Health Centers (NACHC), Qualis, the MacColl Center, and the state PCAs. State PCAs served as the first-line TA source for sites through AIR, with a few states sharing a state PCA because of limited demonstration participation. AIR TA also included a series of nine prerecorded webinars that demonstration sites could download on demand, as well as live webinars on PCMH transformation and other aspects of the demonstration, email and phone contact with experts on PCMH transformation, and online tools through the FQHC web portal for participating demonstration sites.

State PCAs were organized into six regions (known as "clusters") with a state PCA serving as the PCA lead for each region. Additional detail is provided in Appendix A2. While state PCAs

typically provided the demonstration's site-specific TA, regional PCAs were influential in guiding the state-level TA protocol developments and implementation strategies.

AIR also offered bimonthly "office hours" webinars, in which content experts from AIR, Qualis, and NCQA were available to answer questions. The focus of AIR office hours webinars was to facilitate sites' achievement of NCQA Level 3 PCMH recognition. During the office hours, sites could ask questions about the processes of recognition (ahead of time by email, during the webinar with the "chat" function, or during the webinar by telephone).

A major component of AIR TA mentioned by demonstration sites during interviews was the AIR webinars. These were generally considered helpful, especially for information on particular PCMH components and documentation and for answering questions in the office hours sessions.

Use of webinar content varied by sites at different stages and levels of PCMH implementation (e.g., sites that had been working on PCMH transformation and/or obtained PCMH recognition to earlier NCQA standards prior to the demonstration perceived the webinar content more suited to sites early in their PCMH journeys and less applicable to the issues they were confronting). Webinars were mainly used by PCMH leads and other FQHC implementation team members; site clinicians and staff were generally too busy to attend either live or recorded webinars.

Respondents also described interacting, sharing, and learning from other demonstration participants in the office hours webinars, as one respondent remarked: "It's . . . nice to see that other people struggle with the same things we are." At the same time, a few respondents found some of the webinar content to be repetitious.

Uses of PCA Assistance

As noted above, AIR contracted with state PCAs to provide assistance to demonstration sites, particularly through PCA practice coaches, who answered questions, reviewed application materials, gave links to sites to other demonstration resources, and regularly helped sites progress toward achieving medical home recognition and transformation. PCAs also developed archives of examples and templates of the documentation that might fulfill the recognition requirements. More than half of interview respondents reported making use of PCA assistance.

Site leaders noted that a key function of the PCA practice coaches was to help sites navigate, identify, and prioritize the multiple TA resources of the demonstration, which often proved "overwhelming." PCA leaders noted additionally that PCA practice coaches served as an important resource in linking sites to other FQHCs that had prior experience and success with PCMH recognition and transformation, a form of direct peer-to-peer learning. Several respondents commented on the ability of their state PCA to tailor TA to the needs of sites struggling with PCMH concepts and highlighted the flexibility that sites had in using PCA resources.

More than half of demonstration sites in the qualitative interview sample made use of PCA practice coaches, although the availability and use of different PCA TA components varied

across sites. Sites that did not use PCA resources or did not find them helpful tended to be those that considered themselves advanced (at least by the time the PCAs started providing TA) or were delayed in initiating their PCMH effort.

More than half of demonstration sites in the qualitative sample perceived practice coaches to be a valuable resource and TA conduit. The majority of site respondents spoke positively about the support that PCAs provided to demonstration FQHCs, though some indicated that it would have been useful for their state PCA to have been involved earlier in the initiative.

Only a few site respondents reported that their FQHC had not made much use of the demonstration TA provided by PCAs. Of these, one respondent at baseline had faulted the PCA for not providing much assistance, and one respondent at follow-up was not satisfied with the quality of assistance received from their practice coach (whom they thought "was helpful" but "never felt [gave] a really yes or no answer"). The rest of these respondents typically considered the PCA to be "a wonderful resource" for other FQHCs less advanced in the PCMH change process, but not for their own, which they considered being farther along (e.g., the PCA's review of materials being "a really slow process," or their FQHC generally being "ahead of the PCA's curve").

Uses of Qualis TA

Qualis was a national implementation partner to the FQHC APCP Demonstration from its inception. Initially, Qualis mostly provided expert assistance to AIR's TA program, by, for example, participating in the national webinars organized by AIR. Near the end of the second year of the demonstration, Qualis's role shifted to include provision of direct TA to demonstration sites in conjunction with the PCAs. Qualis provided the following forms of TA:

- answering sites' specific NCQA application and documentation questions
- conducting presubmission reviews of NCQA application documentation
- working collaboratively with PCAs to provide direct TA to sites, as well as PCMH training
- participating as experts on the national webinars organized by AIR.

Nearly half of demonstration sites in the qualitative sample took part in Qualis direct TA. Most were referred to Qualis by PCA practice coaches or AIR.

Both the demonstration site and PCA leaders in the follow-up interviews described Qualis as a key resource during the last year of the demonstration. Both site and PCA leaders noted Qualis's expertise on PCMH implementation, particularly with regard to the NCQA recognition requirements, and considered the responses and feedback of Qualis consultants to be authoritative, instructive, and timely, noting that the assistance was "helpful" and "outstanding." PCA leaders reported working collaboratively with Qualis consultants, occasionally using Qualis as a final authority on issues. In the follow-up interviews, all site leaders who used Qualis for a presubmission review found it helpful. Site leaders, in particular, valued the Qualis consultants'

in-depth knowledge of NCQA requirements, the nuances of writing policies and presenting documentation of care in ways to match reviewers' (often unstated) expectations, and ability to help plan a site's effort to develop both initial and add-on applications. There were also site leaders who said they wished they had used Qualis, or had used Qualis sooner, to review documentation and save time on the application and avoid resubmissions.

Leaders of at least one PCA also viewed Qualis as a resource that they intended to use going forward after the demonstration in their PCMH.

Other Sources of TA Outside the Demonstration

In addition to the TA provided by the demonstration, sites also used a range of external sources of TA. For participating FQHCs, these external supports were significant sources of assistance. Approximately half the demonstration FQHCs in our interview sample reported receiving at least some PCMH TA from nondemonstration sources. These other sources of TA included:

- PCA nondemonstration programs
- NCQA nondemonstration training
- HCCNs sponsored by HRSA[27]
- local FQHC consortiums and peer organizations pursuing PCMH recognition
- other sources, including NACHC, other accrediting and recognition organizations, a national IT vendor, a national disease advocacy organization, and private payer initiatives.

The most prominent of these sources (used by a quarter of the demonstration FQHCs that we interviewed) was nondemonstration-funded assistance from PCAs and NCQA. Sites in two states reported receiving PCA support that was independent of the demonstration, including a PCMH learning collaborative initiated by one PCA prior to and concurrent with the demonstration, and PCMH consultants hired by PCAs using nondemonstration funding to work with sites. In addition, two other sites described paying on their own to send staff to NCQA training (regular offerings outside of the demonstration).

Two sites in different states mentioned that the HCCNs provided general PCMH TA, while two other sites reported receiving nondemonstration TA through their local FQHC consortium or engaging in peer-to-peer learning with other primary care organizations pursuing PCMH.

Although none of these nondemonstration sources of TA predominated in the interview sample, the demonstration sites using these sources tended to describe them as valuable, in some cases relying on this TA more than that provided by the demonstration.

[27] HCCNs are networks serving multiple FQHCs intended to promote use of Office of the National Coordinator for Health Information Technology (ONC)-certified EHRs, participation in health information exchange to improve quality, and adoption of technology to support QI activities.

Exhibit 4.2 summarizes the range of TA support used by demonstration sites as well as respondent views about their uses and value. These points are illustrated with selected comments from our site interviews. Additional detail from the interviews regarding TA support can be found in Appendix A5.

Exhibit 4.2. PCMH TA Supports Used by FQHC APCP Demonstration Sites, as Reported by Site and PCA Leader Interviews

PCMH Support Interventions	Most Useful Supports Reported	Other Useful Supports Reported	Variability in Uptake of Support Interventions	Additional Detail on Use of Support Interventions	Illustrative Quotations from Respondents
NCQA	• Answering specific application process inquiries • In-person, offsite training sessions	• Webinars on recognition standards and application process • Mock application surveys • Other presubmission feedback (e.g., RAS audit) • Reviewer and postsubmission feedback	• Most demonstration sites reported using some form of NCQA assistance • NCQA assistance typically was supplemental or for specific uses (although two sites reported NCQA as primary source of TA) • Use of mock surveys was reported by only one site	• Sites typically did not distinguish whether webinars were conducted by NCQA or AIR • Some sites were frustrated that NCQA did not provide guidance on the acceptability of documentation prior to application • In-person, offsite NCQA training can be expensive for sites if not subsidized by other sources	"At NCQA, I had dealings with three different people over the time span that we've been involved, and they've always been very willing to help and go over and above to try and make sure that we understood what it was that was expected of us and help us understand the tools . . . that experience has been very positive." "Some of [TA usefulness] depended on the consultants, though. . . . And so we'd hear that 'so-and-so from NCQA is really good but so-and-so was not so good.' And, 'she's telling them things that we don't think are right.' And so, it actually became kind of some of the known commodities at NCQA, the good, the bad, and the ugly."
AIR (non-PCA)	• Webinars on PCMH transformation, recognition standards, and "office hours" implementation discussions	• Answering and referral of site inquiries • FQHC web portal for participating demonstration sites	• Use and usefulness of webinar content varied by sites at different stages and level of PCMH implementation • Webinars primarily used by PCMH leads and other FQHC implementation team members; site clinicians, staff generally noted as too busy to attend or assimilate either live or recorded webinars	• Sites typically did not distinguishing whether webinars were conducted by NCQA or AIR • Archive of the AIR webinars noted as a useful reference by several sites and PCA leaders	"The ones that I found the most helpful were the AIR webinars . . . because they have actual slides of real documents that have come through, and they are archived. I've gone over and over and over them getting my documentation together." "The standard-specific webinars were tremendously helpful. Just looking at all the different documentation or different variations of supporting documents." "It got a little overwhelming for me personally, because we were involved with the PCA and then the stuff from AIR, the collaborative website, the office hours—you know, and I tried to—there's

PCMH Support Interventions	Most Useful Supports Reported	Other Useful Supports Reported	Variability in Uptake of Support Interventions	Additional Detail on Use of Support Interventions	Illustrative Quotations from Respondents
					just no way possible we could have participated in all of it. And so personally, the PCA staff [were] what I really paid attention to." "I found it really helpful when they went through each standard and provided examples of what constitutes appropriate documentation. [But] once they went through all the standards in depth . . . after that, it was just very redundant."
PCA	• PCA one-on-one coaching: - Answering specific PCMH transformation and recognition inquiries - Reviewing policies and documentation, including presubmission reviews - Serving as a conduit and navigator to other demonstration resources, including NCQA and Qualis - Visiting FQHCs, leadership, and staff - Regular check-	• Webinars and group conference call meetings • In-person PCMH trainings, including sponsoring NCQA presentations • PCMH content integrated in regular PCA state meetings and forums • PCA website and newsletters	• More than half of demonstration sites in the qualitative sample perceived PCA practice coaches to be a valuable resource and TA conduit • Provision and use of different PCA TA components was variable due to willingness and capacity of both sites and PCAs • Sites that did not use PCA resources or find them helpful tended to be those that considered themselves advanced (at least by the time the PCAs started providing TA) or were delayed in initiating	• Several site and PCA leaders wished that assistance for sites had started sooner • Several PCA leaders emphasized the role of PCAs in focusing sites on PCMH transformation, as well as recognition • Site and PCA leaders underscored the need to differentiate TA for sites with varying needs and at differing stages of PCMH transformation and recognition • Several PCAs and PCA regions developed archives of policies and procedures to share with demonstration sites as examples and templates for PCMH documentation	"[The PCA] was a little late getting into the game, but I think they're very good at finding consultants and trainers and putting webinars or sessions together to do it." "Had the PCAs been onboard earlier on, that might have made a difference in just getting those rolled out differently, and our PCA person actually went and got the certifications for the PCMH and so perhaps working with the PCAs ahead of time to make sure they have those individuals in place that are trained at that level [would have been helpful]." "We did four face-to-face trainings in various areas throughout the state, so that a community health center would not have to travel more than one and a half to two hours to attend a training session. They were very well attended. We actually had participation from all of the APCP demonstration sites." "The PCA provides a significant amount of training to health centers. This year we're focusing on what we call [QI], but so much of that falls within the realm of

PCMH Support Interventions	Most Useful Supports Reported	Other Useful Supports Reported	Variability in Uptake of Support Interventions	Additional Detail on Use of Support Interventions	Illustrative Quotations from Respondents
	in and monitoring of progress (prodding and encouragement)		their PCMH effort		implementing PCMH or practice transformation, such as motivational interviewing, . . . which is a big part of [PCMH]." "We had some good mentoring out of our PCA which kept us in the loop [with] tools or information from the demonstration. I worked with one coach primarily, but I know that I had the full resources of the state PCA office, and they kept pretty close ties throughout the demonstration project."
Qualis	• Answering specific NCQA application and documentation inquiries • Presubmission reviews • Collaboration with PCAs to provide training and direct TA to sites • Participated as experts on AIR and PCA sponsored webinars		• Nearly half of the demonstration sites in the qualitative sample took part in Qualis direct TA • Most were referred to Qualis by PCA practice coaches or AIR • Almost all viewed Qualis as a key resource • A few demonstration sites said they wished they had used Qualis or had used it earlier to review documentation to save time on the application or avoid resubmission	• Qualis direct TA to sites began in last year of the demonstration and generally focused on assistance with NCQA recognition • Sites also recognized Qualis staff knowledge in PCMH transformation, mostly through their roles as experts in AIR- and PCA-sponsored webinars • PCA leaders reported working collaboratively with Qualis consultants (who maintained three-way communication among the site, PCA, and Qualis), and occasionally would use Qualis as a final authority or check on issues • Leaders of at least one PCA discussed using Qualis as a resource going	"[T]here was a specific question we had with the referral piece. The person from Qualis was the most helpful out of everybody. Everybody else was just trying to connect to somebody, but no one really gave us answers. So she guided us better." "Qualis Health is involved in those Q&A webinars, too. They would break it down a specific standard, but then you could also ask questions about other standards. I got a lot out of those webinars, I really did." "Qualis were outstanding. They changed how they were doing their technical assistance based on need; they adapted beyond what they were originally doing and just made it much more customized. So it was nice to see them transform [their role in the demonstration] to be more helpful." "They've been very, very helpful. We will continue to use Qualis for other activities because we just felt that they did an excellent job."

PCMH Support Interventions	Most Useful Supports Reported	Other Useful Supports Reported	Variability in Uptake of Support Interventions	Additional Detail on Use of Support Interventions	Illustrative Quotations from Respondents
				forward after the demonstration	
Non-demonstration TA supports	• PCA nondemonstration programs, including: - Statewide PCMH "learning community"[a] - PCMH consultants - NCQA nondemonstra-tion training - Sites that paid to attend NCQA courses - HRSA-sponsored HCCNs • Local FQHC consortiums and peer organizations pursuing PCMH recognition	• Other TA sources reported by demonstration sites: - NACHC - Other accrediting, recognition organizations - A national IT vendor - A national disease advocacy organization - Private payer initiatives (with both TA and financial components)	• Use of different nondemonstration TA supports was highly variable among sites • The most prominent of these sources was PCA and NCQA nondemonstration TA (although still only mentioned by a quarter of demonstration sites in the qualitative sample)	• Although use of nondemonstration TA supports varied, some were considered critical resources by particular sites	Quotations not available

SOURCE: RAND qualitative analyses.

[a] This learning community was a PCMH learning collaborative that a state-level PCA began for FQHCs prior to start of the FQHC APCP Demonstration. It then ran concurrently with the demonstration for several months. Some of the participants in this PCMH learning collaborative also applied to and participated in the FQHC APCP demonstration.

Comparison Sites' Use of PCMH TA

We also looked at the comparison sites' use of TA. Exhibit 4.3 summarizes the differences between the PCMH-related TA used by demonstration sites and the comparison FQHCs, based on the interviews with demonstration and comparison site staff and PCA leaders. The demonstration site column shows the TA components provided by the demonstration at no fee to participating sites. The comparison site column indicates which of these TA components were available to other FQHCs, as well as other TA services provided outside the demonstration.

All comparison FQHCs in our interview sample described receipt of PCMH-related TA. This support tended to be similar to the TA used by the demonstration sites, and was often provided by the same organizations (namely PCAs and NCQA). TA sources used by comparison FQHCs in our interview sample included state PCAs, NCQA, local health departments, and other sources, including NACHC, a local university, and HRSA. However, there were noticeable differences in the functions of this TA, as well as the frequency and intensity of use, compared with those reported for demonstration FQHCs, particularly with regard to PCAs.

More than half of the comparison sites reported receiving some form of PCMH-related TA from their state PCA. This technical support through PCAs included use of PCA practice coaches, nondemonstration PCA conferences, meetings and training sessions, support for use of external PCMH consultants, and (in one state) a PCMH collaborative "learning community." The use of the PCA practice coach was free to a comparison site in one state, but required payment for a site in another state (although intermittently subsidized by private foundations). The regular conferences and training sessions with PCMH content included annual state PCA meetings and specific training sessions, such as for medical informatics and PCMH recognition (NCQA and other). The yearlong PCMH "learning community" in one state—also reported by several demonstration sites—was described as "very helpful" and included monthly collaborative meetings, training sessions, and guidance by PCA staff, as well as group and individual site coaching provided by an external PCMH consultant.

All six PCAs advocated sharing of information and lessons learned through the demonstration with other FQHCs in their state. In terms of practice coaching, three PCAs had in-house PCMH experts or engaged an external consultant who provided one-on-one coaching to all FQHCs in their state at no additional charge; and one PCA developed a practice coaching program prior to the demonstration that was available free to demonstration sites but required fees from other FQHCs (although participation was intermittently subsidized by private foundations). Several PCA practice coaches whose services were already established prior to the demonstration remarked that their programs tended to emphasize practice transformation broadly, whether pursued through PCMH recognition or not.

Exhibit 4.3. PCMH TA Used by Demonstration and Comparison Sites, as Reported in Site and PCA Leader Interviews

PCMH Support Interventions	FQHC APCP Demonstration Sites	Comparison Sites
NCQA	• Webinars on recognition standards and application process • In-person, offsite training sessions[a] • NCQA regular training offerings (considered expensive to attend) • NCQA group trainings sponsored by PCAs (sometimes required fee) • Answering specific application process inquiries • Mock application surveys (limited) • Reviewer and post-submission feedback	• Same as FQHC APCP Demonstration sites
AIR (non-PCA)	• Webinars on PCMH transformation, recognition standards, and "office hours" implementation discussions • FQHC web portal • Answering and referral of site inquiries	• AIR webinars, the FQHC web portal, and responses to site inquiries not available to comparison sites • However, similar webinar information and tools based on the SNMHI are publicly available on the SNMHI website (although no comparison or demonstration sites reported using this resource)
PCA	• PCA group training and resources: - Webinars and group conference call meetings (some limited to demonstration sites, other open to all FQHCs) - In-person PCMH trainings, including sponsoring NCQA presentations - PCMH content integrated in regular PCA state meetings and forums - PCA website and newsletters (some limited to demonstration sites, others to all FQHCs) • PCA one-on-one coaching: - Answering specific PCMH transformation and recognition inquiries - Reviewing policies and documentation, including presubmission reviews - Serving as conduit and navigator to other demonstration resources, including NCQA and Qualis - Visiting FQHCs, leadership and staff - Regular check-in and monitoring of progress (prodding and encouragement)	• PCA group training and resources: - Same or similar to FQHC APCP Demonstration sites at no additional fee to all FQHCs[b] - PCMH "learning community" (in one state), included demonstration and comparison sites, fees subsidized through site HRSA grants • PCA one-on-one coaching: - Typically, by FQHC-initiated request; little to no ongoing check-in or monitoring of progress - Cost: Two (of the six) PCAs offered formal PCMH coaching services for a subsidized fee available to all FQHCs, two offered in-house practice coaching without additional fee to all FQHCs - Two PCAs did not offer practice coaching to sites outside the FQHC APCP Demonstration
Qualis	• Answering specific NCQA application and documentation inquiries • Presubmission reviews • Collaboration with PCAs to provide training and direct TA to sites • Participated as experts on AIR and PCA sponsored webinars	• Qualis PCMH consulting services available for a fee (although use not reported by any comparison site in the qualitative sample)

PCMH Support Interventions	FQHC APCP Demonstration Sites	Comparison Sites
Demonstration-provided reports	• RAS score reports • Medicare beneficiary utilization and cost reports	• Not available to comparison sites • Similar information on Medicare beneficiary utilization and costs available to sites in Medicare ACOs
Other demonstration features: • Three-year deadline • Biannual RAS survey requirement (and audits) • Recognition requirement	• Three-year deadline, biannual RAS survey (and audits), and NCQA Level 3 recognition requirement applied to all demonstration sites - Provided many sites with sense of *accountability* and *structure* for PCMH transformation and recognition process	• Generally, not required to achieve PCMH recognition nor under any particular timeline - Except for participants in specific HRSA disease prevention grant requiring NCQA Level 1 application - Comparison sites also noted general trend among FQHCs and payers, and, in particular, HRSA encouragement and prioritization of PCMH recognition and practice transformation
Other sources of TA	• PCA nondemonstration programs (as noted above) • NCQA nondemonstration training (as noted above) • HCCNs sponsored by HRSA • Local FQHC consortiums and peer organizations pursuing PCMH recognition • Other sources reported by demonstration sites, including the national association of FQHCs (NACHC), other accrediting and recognition organizations, a national IT vendor, a national disease advocacy organization, and private payer initiatives (with TA components)	• Local health department (PCMH-related TA to all local FQHCs) • Other sources reported by comparison sites, including the NACHC, a local university, and HRSA (information on PCMH)

SOURCE: RAND qualitative analyses.

[a] Both demonstration and comparison sites had to pay for NCQA's regularly offered in-person, offsite training sessions. When PCAs sponsored NCQA group training, these sessions were often made available to both demonstration and comparison sites in the state. While these were sometimes available without costs, at other times these also appeared to include a fee. See "Uses of NCQA TA" under Section 4.1. All the other NCQA TA services (e.g., webinars, answering specific application inquiries, mock surveys) were paid for by HRSA for all FQHCs, regardless of demonstration status. Reviewer and postsubmission feedback were likewise basically similar for both demonstration and comparison sites that were applying for NCQA recognition (also paid for by HRSA for all FQHCs).

[b] Comparison sites that were offered PCA-funded training/resources were not charged (at least we did not encounter evidence that they were). However, some training/resources were limited to demonstration sites to which comparison sites did not have access.

All six PCAs reported integrating PCMH education and training content in periodic nondemonstration activities. They tended to offer participation in various demonstration-funded events (such as webinars, speaker sessions, and group-based training) to all FQHCs in the state at no additional charge but did limit certain activities to demonstration sites (e.g., regular "roundtable" conference calls for relaying demonstration-specific information and more intimate sharing of experiences among FQHC APCP Demonstration sites). Three PCAs reported engaging external PCMH consultants to work with demonstration and comparison sites in their state.

Comparison sites received other forms of TA. Two comparison FQHCs reported paying for NCQA in-person training sessions, and another described receiving answers and clarification from NCQA staff during preparation of their recognition application. Two sites in New York City reported having received extensive support from the city health department in both health IT and training for PCMH recognition and related disease management. One site mentioned NACHC as an important source of PCMH information (in addition to their state PCA), while another site reported starting to receive PCMH assistance from a local university (as part of the university's grant-supported program mentioned previously), and a third noted that HRSA encouraged FQHCs to pursue PCMH recognition and practice transformation (whether NCQA or other) and provided information on PCMH.

4.2. Feedback Reports

Overview of Feedback Reports

Receipt of feedback reports by demonstration sites was an important component of the demonstration. With its subcontractors, CMS and RTI International made available three types of site-specific reports to participating sites through the FQHC web portal. These reports provided clinic- or beneficiary-level data and were designed to track demonstration FQHC progress toward pursuing NCQA Level 3 PCMH recognition and to provide cost, utilization, and outcome data for FQHCs' assigned Medicare fee-for-service (FFS) beneficiaries at both the clinic and the beneficiary levels. The reports were designed to provide participating FQHCs with timely interim feedback on their performance. To achieve this, a secure web portal was developed to support FQHC access to the reports and other relevant documents. Data in the feedback reports were based upon RAND's beneficiary assignment algorithm of Medicare beneficiaries to the FQHCs. Appendix C provides a discussion of the evaluation's approach to attributing Medicare beneficiaries to FQHCs.

Form and Function of the Feedback Reports

The content of the feedback reports was expected to be useful and usable for demonstration FQHC participants. Content included RAS data and quality, cost, and utilization measures that

had been harmonized across CMS contractors involved in CMS PCMH demonstrations. The specific feedback report protocol was derived from that reported to practices participating in the Multi-Payer Advanced Primary Care Practice Demonstration.[28] The feedback reports were designed to support the distribution to FQHC practices of their own performance data on the RAS and on key expenditure, quality, and utilization measures for Medicare beneficiaries. Additionally, reports were designed to facilitate FQHC awareness of practice changes over time in the key measures, and to support benchmarking to other participating FQHCs.

The performance measures were based on Medicare FFS claims data for assigned beneficiaries. Utilization measures included summary information for hospital and emergency departments. Medicare expenditure measures included summary information on the share of care that the FQHC provided its assigned Medicare FFS beneficiaries, including average total Medicare expenditures per beneficiary and average Medicare expenditures by type of service. Quality of care measures included summary information about selected quality of care measures, such as LDL-cholesterol, HbA1c screening, retinal eye examinations, neuropathy screening, and total lipid panel screening. For these measures, total lipid panel screening was among beneficiaries with heart disease, and HbA1c testing, retinal eye exam, LDL-cholesterol screening, and neuropathy screening rates were among beneficiaries with diabetes.

Three Types of Feedback Reports

Beginning in Quarter 6, demonstration FQHCs periodically received three types of feedback reports. First, the biannual NCQA RAS report provided FQHCs with current site-level NCQA PCMH recognition level and overall score trends. Second, the quarterly cost and utilization data reports provided site-level claims-based utilization measures, Medicare expenditure summary data, and quality of care measures. Third, a quarterly claims-based beneficiary-level report provided identifiable beneficiary data in a file summarizing key study outcomes for all beneficiaries attributed to the FQHC (e.g., cost, utilization, health data).

Readiness Assessment Feedback Reports

Participating FQHCs were required to complete the NCQA RAS every six months during the course of the demonstration. The first survey was completed as part of the application (November 2011), the second survey was completed May 1, 2012, and subsequent surveys were completed every six months thereafter until May 2014. No RAS data were collected in November 2014 because the demonstration had ended. The only exception to that requirement was that sites that had achieved NCQA Level 3 PCMH recognition within three months of the time that the biannual RAS was due did not have to submit the RAS for that period.

[28] Work Plan for the Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration: Web Portal and Practice Feedback Reports. Prepared by RTI International, July 30, 2012.

The implementation contractor, Truven Analytics, provided RTI with the survey scores following the survey due date. Following receipt of the survey scores, RTI finalized the analyses and incorporated the results into the biannual feedback report. The reports highlighted the six PCMH standards and each of the specific elements that make up each standard.

Quarterly Medicare Claims Utilization and Expenditure Measure Reports

Reports were based upon a summary across inpatient, outpatient, and physician office Medicare claims (Part A and B) for the most recent 12 months, and a beneficiary-level file that showed quality measure and inpatient or emergency room utilization for assigned beneficiaries at the FQHC.

Utilization measures included the following:

- Hospitalization rate (for any cause) (rate per 1,000 beneficiaries per quarter)
- Hospitalization rate for ambulatory care sensitive conditions (ACSCs) (rate per 1,000 beneficiaries per quarter)
- ED visits/observation stays rate (for any cause) (rate per 1,000 beneficiaries per quarter)
- Percentage of ED visits/observation stays not leading to an admission
- Percentage of beneficiaries with an ED visit/observation stay during the quarter.

Annual expenditures (average $ per beneficiary) included the following:

- Total Medicare
- Acute care hospital (all-cause)
- Acute care hospital (for ACSCs)[29]
- All other inpatient facilities
- ED/observation stay
- Outpatient department
- Federally qualified health centers and rural health centers
- Primary care provider services
- Specialty care provider service
- Laboratory
- Imaging
- Home health
- Other.

[29] ACSC was defined using the following Chronic Prevention Quality indicators (PQI): PQI 01 diabetes short-term complications (ketoacidosis, hyperosmolarity, coma); PQI 03 diabetes long-term complications (renal, eye, neurological, or circulatory); PQI 05 chronic obstructive pulmonary disease (COPD) or asthma in older adults; PQI 07 hypertension; PQI 08 congestive heart failure; PQI 13 angina without procedure; PQI 14 uncontrolled diabetes; PQI 15 asthma in younger adults; PQI 16 lower-extremity amputation among patients with diabetes.

It was expected that sharing clinic-level beneficiary utilization, process, and expenditure data with each demonstration FQHC would motivate clinics to identify structures and processes that would improve beneficiary care and outcomes.

Quarterly Claims-Based Beneficiary-Level Reports

Data use agreements were developed with participating FQHCs, and then beneficiary assignment lists covering the demonstration period were used to generate quarterly beneficiary-level data, including PTAN, site name, address, contact name, contact phone number, and basis for attribution. Using these lists, quarterly beneficiary utilization data were made available to demonstration FQHCs. As with clinic-level data, it was expected that sharing beneficiary-level utilization, process, and expenditure information could motivate clinics to identify beneficiaries with unusually high risk scores, recent inpatient utilization for certain chronic conditions, and/or those who may not have been currently meeting quality of care guidelines. Once individual beneficiaries were identified, then clinics could focus on improving care and outcomes for these at-risk individuals.

FQHC Awareness and Use of Feedback Reports

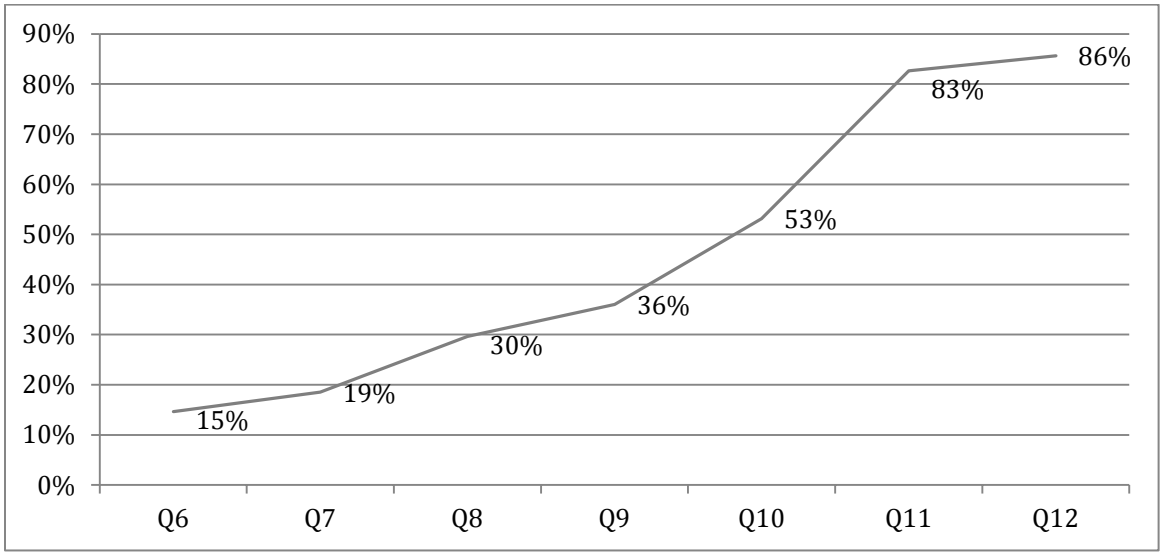
The evaluation team hypothesized that site-level review of feedback reports would serve as a marker for site-level exposure to and use of the demonstration's interventions, since the dates of download were recorded for all participating sites. We examined FQHC use of feedback reports from three data sources.

Demonstration FQHC Log-In to Access Feedback Reports

Feedback reports became available during demonstration Quarter 6, but sites logged on infrequently to see any of these three reports. RAND first accessed data from RTI during demonstration Quarter 6.

Site-level analyses showed that use of feedback reports started slowly but increased substantially over time. By the end of the demonstration, uptake—measured in terms of sites accessing at least one report at least one time during the demonstration—increased from 15 percent in Quarter 6 (when feedback reports first became available) to 86 percent in Quarter 12 when the demonstration finished (Exhibit 4.4).

Exhibit 4.4. Utilization of Feedback Reports Over Time, Showing Percentage of Demonstration FQHCs with Any Web Portal Log-In to View a Report (N=434)



SOURCE: Monthly Portal Login Report provided to RAND by RTI on November 7, 2014.

When RAND discussed low rates of use of feedback reports with sites and with PCA leaders, we learned that many sites did not understand the potential value these reports could have for facilitating either their NCQA application or their transformation. Discussions among AIR, PCA leads, and CMS led to wide dissemination of methods for accessing these reports and for using them to support site transformation efforts.

Site Leader Interviews Pertinent to Feedback Reports

From the 20 interviews with demonstration site leaders at two points in time, we learned that, at nearly half the sites, no interview participants were aware of feedback reports being distributed to their FQHCs. Familiarity with the utilization and cost reports did not appear to increase by follow-up. Limited site leader awareness was also notable even when the interview protocol specifically discussed quarterly Medicare beneficiary utilization and cost reports prepared for individual sites by the demonstration.

RAS Scores

Self-reported RAS data were used to assess sites' interim progress toward becoming a PCMH and toward site-level NCQA PCMH recognition status. While demonstration sites had access to a summary of their RAS submissions semiannually beginning at the demonstration's initiation, RAS feedback reports were available on the FQHC web portal for sites only after demonstration Quarter 6. RAS scores (which ranged from a low of 0 to a high of 100) were

grouped into one of four categories (Level 0, 1, 2, or 3) to indicate the expected readiness of sites for submitting a successful application to NCQA.[30] Appendix A3 provides additional detail about initial RAS scores and their relation to final RAS scores and to NCQA Level 3 PCMH recognition by the end of the demonstration.

In the baseline interviews, most demonstration site respondents indicated that they used the biannual RAS feedback results to one degree or another in monitoring progress toward PCMH recognition. Noted one, "It has been helpful to kind of have a check-and-balance point to where every six months you're reporting your data to CMS and then they're evaluating where you stand as far as your progress towards recognition. So, that has been helpful."

However, by the time of the follow-up interviews, nearly one-fourth of the demonstration sites considered the RAS results to be less helpful because respondents felt the score by itself was insufficient feedback, did not provide new or different information than the site already knew, or was not a good measure of site performance. As one respondent noted, "We knew kind of where we were with the Readiness Assessment. So I can't really say that it helped us."

Utilization and Cost Reports

The utilization and cost reports were available to FQHCs in May 2013, about the time of the fielding of the first round of qualitative interviews. Nevertheless, respondents from most of the 20 demonstration FQHCs whose site leaders were interviewed either were not aware of the quarterly Medicare beneficiary utilization and cost reports or did not consider them helpful. More demonstration sites in the later interviews reported being aware of these reports, yet those that did note reviewing the reports tended to consider them not particularly helpful. Among the 20 sites who participated in the interviews, respondents were variable regarding whether this information was useful. Some respondents indicated they were unsure how to use the data, while others believed the data were of limited value since they included only Medicare patients who made up only a relatively small proportion of their FQHC's patient panel. Several site leaders suggested use of the feedback reports, particularly the utilization and cost reports, could be a useful topic for a future TA webinar.

The only two sites in the follow-up interviews that found the reports helpful were relatively advanced sites that used the information to help identify patients with "frequent flier" utilization patterns. A third site noted they did not use the reports because they already collected similar and more-timely utilization data.

[30] RAS scores were categorized into levels as follows: Level 0 (0–35 points), Level 1 (36–59 points), Level 2 (60–84 points), Level 3 (85–100 points).

Clinician and Staff Survey Experience Analyses of FQHC Use of Feedback Reports

To understand the effects of practice changes during the demonstration, we conducted a CASE survey among clinicians and staff in demonstration sites. This survey is discussed in Chapter Eight and Appendix A13. Here we focus on some questions in the survey that addressed feedback reports during the early and later phases of the demonstration (see Appendix A13). The CASE survey found that, among clinician and staff survey respondents, at baseline, 35 percent and, at follow-up, 55 percent indicated awareness of feedback reports that gave their practice recognition or a score for being a medical home. Among these respondents, 92 percent and 88 percent, respectively, at baseline and follow-up, said the reports were somewhat or extremely clear. Among those who reported having seen a feedback report about becoming a medical home, 83 percent at baseline and 70 percent at follow-up said the information was useful. Among those who noted awareness of the report, more than 80 percent of responding physicians, nurse practitioners, and physician assistants reported that *their work had changed in response to the reports*, and almost 85 percent reported that the *work of others had changed*. These ratings did not vary by RAS score, with the exception of lower likelihood of the respondent's own work changing at RAS Level 1 than at RAS Level 1 in unadjusted analysis (losing statistical significance in adjusted analysis).

4.3. Factors Associated with Demonstration Site Use of TA and Feedback Reports

Because TA and feedback reports were central components of the intervention and were expected to play a key role in helping sites achieve NCQA Level 3 PCMH recognition, we examined how site- and area-level characteristics influenced the likelihood that demonstration sites would use TA or feedback reports, as indicated by four measures:

- attending two or more NCQA webinars (NCQA webinar uptake was low in comparison to the other TA modalities, so we used a different cutoff)
- attending five or more AIR office hour webinars
- attending five or more AIR content webinars
- viewing five or more RAS, cost, and utilization feedback reports.

Among sites that achieved NCQA Level 3 PCMH recognition after the start of TA, counts of TA attendance were limited to those observed prior to NCQA Level 3 recognition. Exhibit 4.5 shows that approximately 16 percent of demonstration sites used two or more NCQA webinars, 40 percent used five or more AIR webinars, 34 percent used five or more AIR office hours, and 26 percent used five or more feedback reports. AIR content webinars, attending AIR office hours, and viewing feedback reports were statistically significantly associated with achieving NCQA Level 3 PCMH recognition.

Exhibit 4.5. Bivariate Relationships Between Demonstration Components and NCQA Level 3 PCMH Recognition for 503 Demonstration Sites

Demonstration Components [a]	All Demonstration Sites (n=503)	Did Achieve NCQA Level 3 PCMH Recognition (n=351)	Did Not Achieve NCQA Level 3 PCMH Recognition (n=152)	p-value
NCQA TA & RAS				
NCQA webinars, n	502	349	153	0.580
Low, n (%)	423 (84.3)	292 (69.0)	131 (31.0)	
High (2+), n (%)	79 (15.7)	57 (72.2)	22 (27.8)	
Air, PCA & Qualis				
AIR webinars***, n	502	349	153	**<0.001**
Low, n (%)	302 (60.2)	172 (57.0)	130 (43.0)	
High (5+), n (%)	200 (39.8)	177 (88.5)	23 (11.5)	
AIR office hours*, n	484	339	145	**0.023**
Low, n (%)	321 (66.3)	214 (66.7)	107 (33.3)	
High (5+), n (%)	163 (33.7)	125 (76.7)	38 (23.3)	
Feedback reports				
Feedback reports***, n	436	302	134	**<0.001**
Low, n (%)	325 (74.5)	208 (64.0)	117 (36.0)	
High (5+), n (%)	111 (25.5)	94 (84.7)	17 (15.3)	

SOURCE: Analyses by RAND.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] Among sites that achieved NCQA Level 3 recognition, counts of TA attendance and quarterly care management fee payments were limited to those observed prior to NCQA Level 3 recognition.

We hypothesized that the baseline medical homeness of the FQHC would be associated with uptake of TA and feedback reports. Specifically, we hypothesized that sites with lower baseline medical homeness would have higher uptake of TA and feedback reports to support their transformation to a PCMH and their NCQA PCMH application. All analyses excluded sites that had achieved NCQA Level 3 recognition prior to the start of TA (NCQA webinars: n=1; AIR office hours: n=19; feedback reports: n=67; AIR content webinars: n=1). Among sites that achieved NCQA Level 3 recognition, counts of TA attendance were limited to those observed prior to NCQA Level 3 recognition. For all TA measures, except for NCQA webinars which had relatively low uptake, high TA use was defined as use five or more times. These analyses used logistic regression to estimate the adjusted association between baseline RAS scores, a measure of baseline medical homeness (primary predictor variable), and uptake of TA or feedback reports (dependent variables). We controlled for a number of site- and area-level characteristics (details presented in Appendix A6).[31]

Results are shown as odds ratios (ORs), where ORs greater than 1 with a p-value of less than 0.1 for a particular characteristic indicate that the characteristic independently increased the likelihood that a site made use of a particular type of TA or a feedback report, as described above.

Exhibit 4.6 shows that a site's baseline medical homeness, measured by RAS score, was an important factor in predicting uptake of TA or feedback reports. Recall that the biannual RAS survey was intended to help sites assess their level of medical homeness. Across three of the four measures (with NCQA webinars as the exception), demonstration sites with higher baseline RAS scores (i.e., with more baseline medical homeness) were less likely to make use of TA or feedback reports than sites with lower baseline RAS scores. For example, sites with RAS Level 1, 2 or 3 at baseline were significantly less likely to attend five or more AIR webinars than sites with RAS Level 0 (respectively odds ratio [OR]=0.55, OR=0.24, and OR=0.10; p=0.094, p<0.0001, p<0.0001). Sites with ambulatory care accreditation[32] at baseline were significantly

---

[31] These analyses controlled for a number of site- and area-level characteristics (details available in Appendix A6): (1) nondemonstration external PCMH funding (ACA Building Capacity Grantee, ACA New Access Grantee, and/or ACA Immediate Facility Improvement Grantee, HCCN grantee [funded August 1, 2013], HRSA PCMH Initiative participant, PCMH supplemental funding recipient, FY 2011); (2) site-level service characteristics (years in operation, number of sites, total revenue per site [in millions], number of primary care physicians, number of specialists); (3) site-level beneficiary characteristics at the mean clinic-level (mean age, mean HCC score, percentage disabled, percentage dual-eligible, Medicare beneficiaries attributed in year preceding demonstration); (4) site-level geographic characteristics (region, rural urban continuum, percentage of households in poverty); (5) PCMH cultural readiness (ambulatory care accreditation; participation in other CMS demonstration as of June 2013).

[32] Ambulatory care accreditation is an indicator of whether the site's grantee organization received accreditation from the Joint Commission or AAAHC for meeting quality of care standards for ambulatory services around the time of the demonstration's initiation (the year before or within the first quarter of the demonstration). Data were collected by CMS prior to the demonstration and supplied to RAND by Truven Analytics, CMS implementation contractor, on February 29, 2012.

less likely to attend five or more office hours (OR=0.60) or view five or more feedback reports (OR=0.52), even after adjusting for their baseline RAS values. Sites that were grantees of other types of external funding were, on average, not more likely to use TA or feedback reports; however, sites that were also HCCN grantees were two times more likely to attend five or more AIR webinars (OR=2.33, $p<0.0001$) and had 50 percent increased odds of attending five or more AIR office hours (OR=1.53, p=0.062) while those with ACA funding had increased odds of attending five or more AIR webinars (OR=1.86, p=0.010) and PCMH supplemental funding recipients were approximately three times more likely to view five or more feedback reports (OR=2.93, p=0.063). Overall, uptake of TA and feedback reports varied notably among demonstration sites, and baseline characteristics of the FQHCs were statistically significantly associated with TA and feedback report uptake.

For these analyses, we were not able to include some site-level factors that are likely to be important factors in TA or feedback report use because these were not known consistently across all demonstration sites and therefore were not available for inclusion in these analyses at the site level. These factors include the sophistication of the site's EHR system, the number of nonclinician staff available to use TA or feedback reports, the strength of the FQHCs practice leadership, its leaders' priorities, the extent to which information about the demonstration was communicated from management to staff, the level of encouragement and time provided by leadership to participate in TA or use feedback reports, and the site's practice culture (including how strongly staff embrace QI initiatives).

Exhibit 4.6. Multivariate Relationship Between Site-Level Characteristics and Uptake of TA and Feedback During the FQHC APCP Demonstration

	Uptake of Each of Four Types of Demonstration Components: TA and Feedback											
	2+ NCQA Webinars			5+ AIR Office Hours			5+ Feedback Reports			5+ AIR Webinars		
Number of sites included in analysis, n	(n=502) [a]			(n=484) [a]			(n=436) [a]			(n=502) [a]		
Characteristic	**OR**	**Standard Error (SE)**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**
Elements promoting PCMH transformation												
Nondemonstration Interventions												
External funding												
ACA funding[b]	1.02	0.30	0.940	1.00	0.24	0.997	1.47	0.27	0.152	**1.86***	**0.24**	**0.010**
HRSA PCMH Initiative participant	0.84	0.28	0.530	0.71	0.22	0.117	0.68	0.25	0.133	1.20	0.22	0.422
PCMH supplemental funding recipient	0.58	0.53	0.308	0.59	0.45	0.240	**2.93†**	**0.58**	**0.063**	1.79	0.52	0.264
Service characteristics												
Years in Operation												
1–30 years[c]	[*reference*]											
30+ years[c]	0.99	0.33	0.985	**1.80***	**0.26**	**0.022**	1.51	0.30	0.165	1.21	0.26	0.478
Number of service delivery sites [c]												
1 site	[*reference*]											
2 –10 sites	NA [c]			0.48	0.69	0.291	0.49	0.75	0.347	0.80	0.76	0.771
11+ sites	1.04	0.31	0.904	0.44	0.73	0.267	0.33	0.80	0.169	0.56	0.79	0.464
Total revenue per site [c]	0.94	0.11	0.548	0.94	0.09	0.442	0.90	0.10	0.304	**1.17†**	**0.08**	**0.066**
Number of primary care physicians [c]	1.01	0.04	0.795	0.97	0.03	0.300	1.02	0.03	0.538	1.00	0.03	0.995

	Uptake of Each of Four Types of Demonstration Components: TA and Feedback											
	2+ NCQA Webinars			5+ AIR Office Hours			5+ Feedback Reports			5+ AIR Webinars		
Number of sites included in analysis, n	(n=502) [a]			(n=484) [a]			(n=436) [a]			(n=502) [a]		
Characteristic	**OR**	**Standard Error (SE)**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**
Number of specialists [c]	0.94	0.11	0.523	1.08	0.06	0.184	1.14	0.08	0.133	**1.16***	**0.08**	**0.047**
Beneficiary characteristics												
Mean age [c]	1.00	0.08	0.973	1.00	0.07	0.971	1.00	0.09	0.985	1.02	0.07	0.795
Mean HCC score [c,d]	0.51	0.99	0.496	**0.18***	**0.84**	**0.040**	1.91	0.95	0.496	3.11	0.79	0.153
Percent disabled	1.01	0.03	0.709	1.01	0.02	0.671	1.00	0.02	0.912	1.02	0.02	0.298
Percent dual-eligible [c]	1.00	0.01	0.928	1.01	0.01	0.283	0.99	0.01	0.209	**0.99†**	**0.01**	**0.084**
Medicare beneficiaries attributed in year preceding demonstration [c]	1.00	0.00	0.616	1.00	0.00	0.652	1.00	0.00	0.405	1.00	0.00	0.619
Geographic characteristics												
PCA regions												
Central	[*reference*]											
Mid-Atlantic	1.06	0.45	0.906	**0.51†**	**0.40**	**0.089**	0.42	0.53	0.104	0.53	0.41	0.130
Northeast	0.64	0.50	0.363	0.81	0.41	0.612	**3.78****	**0.47**	**0.004**	**3.17****	**0.40**	**0.004**
Southeast	0.85	0.44	0.700	1.03	0.37	0.929	1.52	0.44	0.342	1.30	0.38	0.482
West	**0.09****	**0.84**	0.004	0.86	0.40	0.710	**2.06†**	**0.43**	**0.096**	0.96	0.39	0.914
West-Central	0.74	0.40	0.455	0.86	0.33	0.645	1.06	0.40	0.895	1.20	0.32	0.574
Rural-Urban Continuum Code												
Metro	[*reference*]											
Nonmetro–rural	0.83	0.37	0.608	1.38	0.29	0.268	1.10	0.33	0.762	1.06	0.29	0.833
Nonmetro–urban	1.34	0.43	0.499	1.43	0.39	0.360	0.80	0.45	0.626	1.53	0.38	0.270
Percentage of households in poverty	1.01	0.01	0.324	1.00	0.01	0.945	0.99	0.01	0.493	0.99	0.01	0.402

	Uptake of Each of Four Types of Demonstration Components: TA and Feedback											
	2+ NCQA Webinars			5+ AIR Office Hours			5+ Feedback Reports			5+ AIR Webinars		
Number of sites included in analysis, n	(n=502) [a]			(n=484) [a]			(n=436) [a]			(n=502) [a]		
Characteristic	**OR**	**Standard Error (SE)**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**
PCMH practice readiness												
Predemonstration medical homeness												
Level 0 (<35 points)	[*reference*]											
Level 1 (35–59 points)	1.48	0.46	0.389	0.71	0.35	0.331	0.79	0.41	0.576	**0.55†**	**0.36**	**0.094**
Level 2 (60–84 points)	1.14	0.47	0.777	**0.36****	**0.36**	**0.005**	0.60	0.42	0.224	**0.24*****	**0.37**	**<0.0001**
Level 3 (85–100 points)	0.56	0.66	0.375	**0.44†**	**0.44**	**0.062**	**0.24***	**0.56**	**0.010**	**0.10*****	**0.49**	**<0.0001**
EHR functionality												
Certified EHR product	0.70	0.40	0.364	1.13	0.32	0.699	1.44	0.36	0.308	**1.81†**	**0.33**	**0.071**
PCMH cultural readiness												
Ambulatory care accreditation	0.97	0.29	0.914	**0.60***	**0.24**	0.032	**0.52***	**0.30**	**0.030**	0.71	0.24	0.150
HCCN grantee	1.19	0.30	0.555	**1.53†**	**0.23**	**0.062**	1.41	0.26	0.192	**2.33*****	**0.23**	**<0.0001**
Participation in other CMS demonstration	**1.92†**	**0.37**	**0.078**	0.70	0.31	0.253	1.02	0.35	0.948	1.30	0.30	0.369

SOURCE: Baseline characteristics—compiled by Truven Analytics, sent to RAND 2/29/2012; NCQA, 2014, compiled by Truven Analytics. AIR, 2014; CMS, 2014, compiled by Truven Analytics (recognition data provided to RAND on April 22, 2013, for starting the six-month window); RTI, undated.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] TA is respectively defined as participation in each of four different components of the intervention: 2+ NCQA webinars, 5+ AIR webinars; 5+ AIR office hours webinars, or utilization of 5+ feedback reports. All analyses excluded sites that had achieved NCQA Level 3 recognition prior to the start of TA (NCQA webinars: n=1; AIR office hours: n=19; feedback reports: n=67; AIR content webinars: n=1). Among sites that achieved NCQA Level 3 recognition, counts of TA attendance were limited to those observed prior to NCQA Level 3 recognition. Analyses controlled for baseline site- and area-level characteristics. Predemonstration medical homeness is assessed using a site's RAS score.

[b] ACA funding is a composite measure of ACA Building Capacity Grantee, ACA New Access Grantee, and/or ACA Immediate Facility Improvement Grantee.

[c] Missing data were imputed using the mean value for each characteristic.

[d] Mean HCC score should be interpreted cautiously as the measure was not scaled to account for the distribution of the score. This measure was used as a covariate and not as a main effect.

4.4. Chapter Summary and Conclusion

In this chapter, we described TA resources and feedback reports used by FQHCs to support PCMH recognition and transformation:

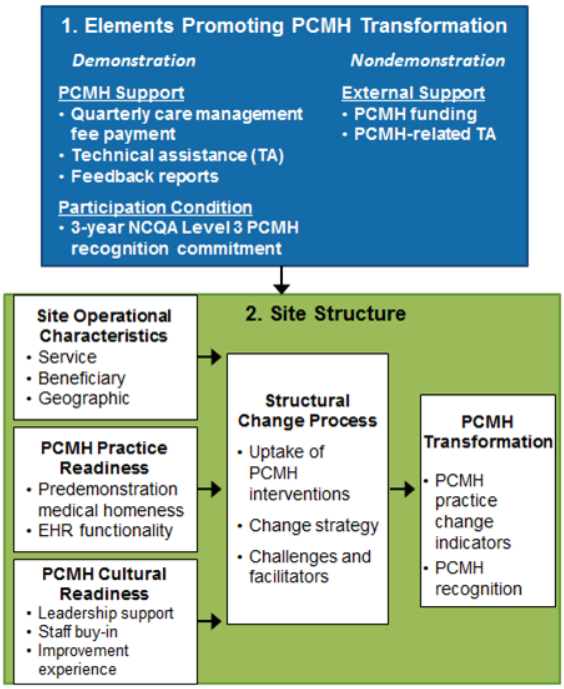
- Several sources of TA were available to demonstration sites both from within the demonstration—at no cost—and from outside. The most useful of these included NCQA responses to individual site inquiries and in-person training, AIR webinars about particular PCMH components and documentation, PCA practice coaches, and Qualis's expertise on PCMH implementation and particularly the NCQA recognition requirements. Most sites did not consistently participate in the NCQA webinars.
- Comparison sites had access to TA similar to that available to demonstration sites, but to a lesser extent and at a higher cost.
- Site respondents made several overarching points regarding the use of TA:
  - They recognized the value of TA, particularly as a means of helping them navigate the complexities of the PCMH model.
  - FQHCs valued TA to help them chart a course of change and coordinate their efforts.
  - TA was also valued as a support for the ongoing education involved in transformation.
- TA available to demonstration sites was not well-coordinated during the first 18 months, but improved substantially in the second half of the demonstration with better communication and streamlining.
- Feedback reports were available only to demonstration sites. However, many sites did not access the reports until the final months of the demonstration. Fifteen percent of demonstration sites had accessed the reports online by the end of Quarter 6, while 86 percent of demonstration sites had accessed them at least once by the end of the demonstration. Our analyses of the relationship between site-level characteristics and demonstration sites' use of TA and feedback reports showed that a site's baseline RAS score was an important factor predicting use of TA or feedback reports. Across three of four measures (with NCQA webinars as the exception), demonstration sites with higher baseline RAS scores were less likely to participate in TA or to use feedback reports than were sites with lower baseline RAS scores. However, data for many site-level factors that are likely to be associated with TA use were not known consistently across all demonstration sites.

5. Demonstration Effect on Medical Home Recognition

In Chapters Three and Four, we presented results concerning the ways in which sites used quarterly care management fee payments, TA, and feedback reports in the process of seeking PCMH recognition. This chapter builds on those analyses by looking at the factors that are associated with FQHC achievement of NCQA Level 3 PCMH recognition. These factors are based on both quantitative and qualitative indicators of variables identified in the conceptual model of PCMH structural change (see Exhibit 5.1, which reproduces the first two boxes in Exhibit 1.2). These variables include site-level indicators for operational characteristics, PCMH practice readiness, and PCMH cultural readiness, as well as dynamics of the structural change process. Site-level indicators for operational characteristics include service, beneficiary, and geographic characteristics. PCMH practice readiness refers to the "medical homeness" of site care practices, EHR system functionality, and PCMH cultural readiness (including improvement experience, leadership support, and staff buy-in). The structural change process includes the uptake of PCMH-related interventions such as the various components of the demonstration (e.g., funding, TA, and access to feedback reports). A detailed description of the definitions and derivations for the variables we use in these analyses can be found in Appendix A6.

This chapter has two main sections. We first look at the relationship of site characteristics and NCQA Level 3 PCMH recognition. We then look at the association between uptake of the demonstration components and achievement of NCQA Level 3 PCMH recognition.

Exhibit 5.1. Conceptual Model of Factors Influencing PCMH Transformation and the Attainment of Medical Home Recognition



5.1. Association Between Site-Level Characteristics and PCMH Recognition

We first considered the relationship between various site-level characteristics and the achievement of NCQA Level 3 PCMH recognition. To examine this issue, we considered the extent to which participation in the demonstration was associated with NCQA Level 3 PCMH recognition, accounting for site- and area-level characteristics at baseline.

These analyses controlled for important differences between demonstration and comparison FQHCs in site- and area-level characteristics (see Appendix A7**,** Exhibit A7.1, for more information). For example, demonstration FQHCs were significantly more likely than comparison FQHCs to have more than one service delivery site and to have received baseline ambulatory care accreditation.[33] Demonstration FQHCs were also significantly more likely to be

[33] Ambulatory care accreditation is an indicator of whether the site's grantee organization received accreditation from the Joint Commission or AAAHC for meeting quality of care standards for ambulatory services around the time of the demonstration's initiation (the year before or within the first quarter of the demonstration). Data were collected by CMS prior to the demonstration and supplied to RAND by Truven Analytics, CMS's implementation contractor, on February 29, 2012.

recipients of external funding—such as ACA grants, the HRSA PCMH Initiative and PCMH supplemental funding programs—and to participate in other CMS demonstrations.[34]

We estimated the associations between being a demonstration site (primary predictor variable) and achieving NCQA Level 3 PCMH recognition, adjusting for site- and area-level characteristics present at the time of the demonstration's initiation. Results are shown as ORs, where an OR greater than 1 with a p-value of less than 0.1 for a particular characteristic indicates that the characteristic independently increases the likelihood that a site achieved NCQA Level 3 PCMH recognition.

In Exhibit 5.2, we show an analysis of the association between participation in the demonstration and achievement of NCQA Level 3 PCMH recognition among 1,330 sites (503 demonstration sites, 827 comparison sites). We found the following statistically significant results (Exhibit 5.2).

- Participation in the demonstration was associated with achieving NCQA Level 3 PCMH recognition (OR=20.33).
- Sites that were members of a grantee organization with ambulatory care accreditation at baseline were less likely to achieve NCQA Level 3 PCMH recognition (OR=0.61).[35] In sensitivity analyses, baseline ambulatory care accreditation was associated with other PCMH recognition (i.e., AAAHC, Joint Commission, state-based recognition (see Appendix A, Exhibit A7.3), which suggests that sites that have ambulatory care accreditation at baseline may be less likely to pursue NCQA Level 3 PCMH recognition and more likely to pursue other types of PCMH recognition.
- Receiving external funding and participating in other demonstrations were associated with increased likelihood of receiving NCQA Level 3 PCMH recognition.
- Sites that were also HCCN grantees had a twofold increased odds of receiving NCQA Level 3 PCMH recognition (OR=2.08) compared with sites without these additional external funding sources.
- Sites that were also ACA grantees had twofold increased odds of achieving NCQA Level 3 PCMH recognition (OR=1.86) compared with sites that were not ACA grantees. HRSA PCMH participation was also associated with NCQA Level 3 PCMH recognition (OR=2.02).
- Recipients of PCMH supplemental funding were more likely to achieve any NCQA recognition (OR=1.55).

---

[34] ACA grants included the ACA Building Capacity Grantee, ACA New Access Grantee, and/or ACA Immediate Facility Improvement Grantee. PCMH supplemental funding includes one-time-only grants of $35,000 (in FY 2011) designed to facilitate PCMH transformation by enhancing access to care, patient flow redesign, care planning, support for team-based models of service delivery, and necessary systems upgrades. Examples of other CMS demonstrations include Pioneer, Medicare Shared Savings Plan, and the North Carolina 646 demonstrations.

[35] This is an indicator of whether the sites that are members of a grantee organization received accreditation for meeting quality of care standards for ambulatory services. Data were collected by CMS prior to the demonstration and supplied to RAND by Truven on February 29, 2012.

These site-level measures of external funding may have provided sites with additional resources that facilitated achievement of PCMH recognition, including NCQA Level 3 PCMH. This concept was supported by interviews with site leaders as described in Section 3.2, which indicated that external funding and having a certified EHR product at baseline were associated NCQA Level 3 PCMH recognition. External funds may have helped sites hire additional staff, develop their EHR product, and pay for other efforts necessary to facility PCMH transformation.

Unmeasured site-level factors may have been important contributors to PCMH recognition; however, these data were not consistently available for both demonstration and comparison FQHCs. For example, there may be characteristics of FQHCs that were associated with their successful application to become a demonstration site and that were also associated with achieving medical home recognition. To address the many measures related to PCMH recognition (e.g., practice culture) that were not systematically available for inclusion in these analyses of all demonstration sites, we explored additional variables, using qualitative analyses for 20 demonstration sites (see Chapter Six) and CASE survey analyses of representatives of all demonstration sites (see Chapter Eight).

Exhibit 5.2. Multivariable Relationships Between Site-Level Characteristics and NCQA Level 3 PCMH Recognition for 1,330 Demonstration and Comparison FQHCs

	NCQA Level 3 PCMH Recognition (N=1,330)	
Site-Level Characteristics	**OR (SE)**	**p-value**
Elements promoting PCMH transformation		
Demonstration interventions		
Participation in the FQHC APCP Demo	**20.33*** (3.65)**	**<0.001**
Nondemonstration interventions		
External funding		
ACA funding[a]	**1.86*** (0.32)**	**<0.001**
HRSA PCMH Initiative participant	**2.02*** (0.34)**	**<0.001**
PCMH supplemental funding recipient	1.45 (0.38)	0.147
Site characteristics		
Years in operation		
1–30 years[b]	*[reference]*	
30+ years[b]	0.87 (0.17)	0.465
Number of service delivery sites		
1 site	*[reference]*	
2–10 sites	1.54 (0.68)	0.323
11+ sites	**2.30† (1.09)**	**0.079**
Total revenue per site[b]	**1.23*** (0.07)**	**<0.001**
Number of primary care physicians[b]	1.01 (0.02)	0.598
Number of specialists[b]	0.96 (0.04)	0.382

Site-Level Characteristics	NCQA Level 3 PCMH Recognition (N=1,330) OR (SE)	p-value
Beneficiary characteristics		
Mean age[b]	1.04 (0.05)	0.464
Mean HCC score[b,c]	**2.54†(1.39)**	**0.088**
Percent disabled	1.01 (0.02)	0.512
Percent dual-eligible[b]	1.01 (0.01)	0.131
Medicare beneficiaries attributed in year preceding demonstration[b]	1.00 (0.00)	0.254
Geographic characteristics		
PCA regions		
Central	*[reference]*	
Mid-Atlantic	**0.25*** (0.08)**	**<0.001**
Northeast	**2.01* (0.61)**	**0.020**
Southeast	**0.55* (0.15)**	**0.034**
West	**0.36** (0.11)**	**0.001**
West-Central	0.84 (0.22)	0.412
Rural-urban continuum		
Metro	*[reference]*	
Nonmetro–urban	0.85 (0.19)	0.503
Nonmetro–rural	1.14 (0.32)	0.642
Percentage of households in poverty	**0.98** (0.01)**	**0.007**
PCMH cultural readiness		
Ambulatory care accreditation	**0.61** (0.11)**	**0.008**
HCCN grantee	**2.08*** (0.36)**	**<0.001**
Participation in other CMS demonstration	1.01 (0.22)	0.953

SOURCE: Baseline characteristics—compiled by Truven Analytics, sent to RAND February 29, 2012; NCQA recognition—NCQA 2014 compiled by Truven Analytics; analyses by RAND.

NOTES: Among 1,330 demonstration and comparison FQHCs, 445 (33.5 percent) sites achieved NCQA Level 3 PCMH recognition.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] ACA funding is a composite measure of ACA Building Capacity Grantee, ACA New Access Grantee, and/or ACA Immediate Facility Improvement Grantee.

[b] Missing data were imputed using the mean value for each characteristic.

[c] Mean HCC score should be interpreted cautiously as the measure was not scaled to account for the distribution of the score. This measure was used as a covariate and not as a main effect.

In Exhibit 5.3, we show an analysis similar to that shown in Exhibit 5.2, but we now limit the analysis to the 503 demonstration sites for which we have two additional measures of baseline "medical homeness": RAS scores and availability of EHR systems. Among demonstration sites, we identified the following statistically significant results:

- Baseline medical homeness, measured with RAS scores, was not associated with NCQA Level 3 PCMH recognition; however, having a certified EHR product was associated with NCQA Level 3 PCMH (OR=4.50, p<0.001).
- Receipt of external funding was associated with increased likelihood of achieving NCQA Level 3 PCMH recognition. Demonstration FQHCs with ACA grants (OR=2.37, p=0.001), HRSA PCMH Initiative participation (OR=1.89, p=0.009), or PCMH supplemental funding (OR=3.95, p=0.006) were more likely to achieve NCQA Level 3 PCMH recognition than were demonstration FQHCs without supplemental funding.
- Demonstration FQHCs that also participated in other CMS demonstrations had increased odds of achieving NCQA Level 3 PCMH recognition (OR=1.78, p=0.093); however, ambulatory care accreditation was associated with significantly reduced odds of NCQA Level 3 recognition (OR=0.39, p<0.001). As noted earlier, sites with ambulatory care accreditation may have been more likely to pursue other forms of PCMH recognition, which may account for this finding.

The results for the demonstration-site-only analyses are slightly different from those that include both demonstration and comparison sites. These differences are due to different independent variables;[36] different power to detect significant differences;[37] and potential unmeasured confounders that vary between demonstration and comparison sites.

Exhibit 5.3. Multivariable Relationships Between Site-Level Characteristics and NCQA Level 3 PCMH Recognition for 503 Demonstration FQHCs

	NCQA Level 3 PCMH Recognition (n=503)	
Site-Level Characteristics	**OR (SE)**	**p-value**
Elements promoting PCMH transformation		
Nondemonstration interventions		
External funding		
ACA funding[a]	**2.37** (0.64)**	**0.001**
HRSA PCMH Initiative participant	**1.89** (0.46)**	**0.009**
PCMH supplemental funding recipient	**3.95** (1.97)**	**0.006**
Service characteristics		

[36] For example, Exhibit 5.2 includes demonstration participation as a predictor; Exhibit 5.3 does not include demonstration participation as a predictor, but does include baseline RAS score and availability of EHR at baseline.

[37] Exhibit 5.2 has 1,330 observations, and Exhibit 5.3 has 503 observations.

Site-Level Characteristics	NCQA Level 3 PCMH Recognition (n=503) OR (SE)	p-value
Years in operation		
1–30 years[b]	*[reference]*	
30+ years [b]	1.22 (0.35)	0.488
Number of service delivery sites		
2–10 sites	1.16 (1.06)	0.872
11+ sites	0.52 (0.49)	0.492
Total revenue per site (in millions)[b]	0.90 (0.09)	0.269
Number of primary care physicians[b]	1.00 (0.03)	0.916
Number of specialists[b]	**1.27* (0.15)**	**0.044**
Beneficiary characteristics		
Mean age[b]	0.96 (0.08)	0.604
Mean HCC score[b,c]	**16.48** (15.67)**	**0.003**
Percent disabled	0.99 (0.02)	0.765
Percent dual-eligible[b]	1.02 (0.01)	0.105
Medicare beneficiaries attributed in year preceding demonstration[b]	1.00 (0.00)	0.190
Geographic characteristics		
PCA regions		
Central	*[reference]*	
Mid-Atlantic	**0.17*** (0.07)**	**<0.001**
Northeast	1.74* (0.93)	0.299
Southeast	**0.32** (0.13)**	**0.005**
West	**0.39* (0.18)**	**0.037**
West-Central	0.56 (0.22)	0.137
Rural-urban continuum		
Metro	*[reference]*	
Nonmetro–urban	0.86 (0.27)	0.629
Nonmetro–rural	2.16 (1.04)	0.110
Percentage of households in poverty	0.99 (0.01)	0.230
PCMH practice readiness		
Predemonstration medical homeness[d]		
Baseline RAS Level 0 (<35 points)	*[reference]*	
Baseline RAS Level 1 (35–59 points)	1.62 (0.66)	0.238
Baseline RAS Level 2 (60–84 points)	0.94 (0.38)	0.870
Baseline RAS Level 3 (85–100 points)	0.73 (0.35)	0.518
EHR functionality		
Certified EHR product	**4.50*** (1.51)**	**<0.001**
PCMH cultural readiness		

Site-Level Characteristics	NCQA Level 3 PCMH Recognition (n=503)	
	OR (SE)	p-value
Ambulatory care accreditation	**0.39*** (0.10)**	**<0.001**
HCCN grantee	1.47 (0.38)	0.136
Participation in other CMS demonstration	**1.78† (0.61)**	**0.093**

SOURCE: Baseline characteristics—compiled by Truven Analytics, sent to RAND 2/29/2012; NCQA recognition—NCQA 2014 compiled by Truven Analytics; analyses by RAND.

NOTE: 351 demonstration sites (69.8 percent) achieved NCQA Level 3 PCMH recognition.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] ACA funding is a composite measure of ACA Building Capacity Grantee, ACA New Access Grantee, and/or ACA Immediate Facility Improvement Grantee.

[b] Missing data were imputed using the mean value for each characteristic

[c] Mean HCC score should be interpreted cautiously as the measure was not scaled to account for the distribution of the score. This measure was used as a covariate and not as a main effect.

[d] Self-reported RAS data were used to assess sites' interim progress toward becoming a PCMH and toward site-level NCQA PCMH recognition status. Baseline RAS scores were converted to NCQA-equivalent baseline RAS scores defined as: RAS<35 (NCQA Level 0), RAS=36–59 (NCQA Level 1), RAS=60–84 (NCQA Level 2), RAS=85–100 (NCQA Level 3).

5.2. Association Between Uptake of Demonstration Components and the Achievement of NCQA Level 3 PCMH Recognition

Section 5.1 examined the association between site characteristics and medical home recognition. In this section, we examine the association between uptake of the demonstration components, TA and feedback reports, and medical home recognition, after adjusting for baseline site characteristics. In these analyses, we focus on whether the 503 demonstration FQHCs achieved NCQA Level 3 PCMH recognition by the demonstration's end.

Relationship Between Care Management Fee Payments and NCQA Level 3 PCMH Recognition

We hypothesized that care management fee payments provided through the demonstration might be associated with the achievement of NCQA Level 3 PCMH recognition. These fees provide additional resources which may be used by the site to facilitate achievement of PCMH recognition, including NCQA Level 3 PCMH. Section 3.2 provides additional detail about how fees are used by sites. We did not observe a statistically significant association between care management fee payments made to FQHCs and achievement of NCQA Level 3 PCMH recognition by the demonstration's end. Overall, the quarterly care management fee payment of $18 for each eligible Medicare beneficiary may not have been sufficient to be independently associated with NCQA Level 3 PCMH recognition. Site leaders highlighted that the payment covered only a portion of the investment required for practice transformation and the effort to attain NCQA Level 3 recognition.

Relationship Between TA Uptake and Use of Feedback Reports with NCQA Level 3 PCMH Recognition

To prepare for our assessment of the impact on NCQA Level 3 PCMH recognition of exposure to demonstration TA components, in Section 4.3, we previously described the results of our assessment of the factors associated with four demonstration components:

- attending two or more NCQA webinars
- attending five or more AIR office hour webinars
- attending five or more AIR content webinars
- viewing five or more feedback reports.

In this section, we show the results of our assessment of the association between uptake of TA or feedback reports and achievement of NCQA Level 3 PCMH recognition (Exhibit 5.4). We defined the four demonstration components in the same manner as we did for analyses estimating site-level characteristics associated with TA or feedback report uptake (Section 5.1).

We present one regression predicting each of the demonstration components (TA and feedback reports) as dependent variables. All analyses were restricted to demonstration FQHCs and excluded sites that had achieved NCQA Level 3 PCMH recognition prior to the start of TA or feedback reports (NCQA webinars: n=1; AIR office hours: n=19; feedback reports: n=67; AIR content webinars: n=1). Among sites that achieved NCQA Level 3 recognition, counts of TA and feedback report uptake were limited to those observed prior to NCQA Level 3 recognition. Among sites that achieved NCQA Level 3 recognition after the start of TA or feedback reports, counts of uptake were limited to those observed prior to NCQA Level 3 recognition.

Attending five or more AIR webinars (OR=4.74), attending five or more AIR office hours (OR=1.78), and viewing five or more feedback reports (OR=2.77) were statistically significantly associated with achieving NCQA Level 3 PCMH recognition. Attending NCQA webinars was not statistically significantly associated with NCQA Level 3 PCMH recognition. Nor did we find a statistically significant association between baseline RAS and NCQA Level 3 PCMH recognition after controlling for baseline site- and area-level characteristics, and use of TA and external funding. [38]

[38] The lack of a significant relationship between baseline RAS and NCQA Level 3 PCMH after controlling for baseline characteristics was interesting given the previously noted finding (Exhibit 4.6) that sites with lower baseline RAS levels were more likely to use TA throughout the demonstration (as shown in Exhibit 4.6). Nevertheless, as shown in Exhibits 5.3 and 5.4, respectively, baseline medical homeness, measured with RAS scores, was not associated with NCQA Level 3 PCMH recognition; though having a certified EHR product was associated with NCQA Level 3 PCMH (OR=4.50, $p<0.001$), and external funding, TA, and baseline EHR were each significant predictors of NCQA Level 3 PCMH recognition. In aggregate, these findings suggest other factors that correlate with baseline RAS (e.g., the use of a certified EHR and external funding), are the salient predictors of NCQA Level 3 recognition, not the baseline RAS score.

Exhibit 5.4. Multivariable Relationship Between TA Participation, Feedback Reports, and Final Demonstration NCQA Level 3 PCMH Recognition

	Measure of TA Participation or Use of Feedback Reports											
	Two+ NCQA Webinars			Five+ AIR Office Hours			Five+ Feedback Reports			Five+ AIR Webinars		
Characteristic	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**
Number of sites included in analysis, n	(n=502)[a]			(n=484)[a]			(n=436)[a]			(n=502)[a]		
Elements promoting PCMH transformation												
Demonstration interventions												
No/Low TA/feedback report use[a]	[*reference*]											
High TA/feedback report use[a]	1.43	0.35	0.299	**1.78***	**0.28**	**0.036**	**2.77****	**0.34**	**0.003**	**4.74*****	**0.30**	**<0.001**
Nondemonstration interventions												
External funding												
ACA funding [b]	**2.35****	**0.27**	**0.002**	**2.12****	**0.28**	**0.007**	**1.78***	**0.28**	**0.041**	**2.09****	**0.28**	**0.008**
HRSA PCMH Initiative participant	**1.89****	**0.24**	**0.009**	**2.07****	**0.25**	**0.004**	**1.88***	**0.26**	**0.016**	**1.84***	**0.25**	**0.016**
PCMH supplemental funding recipient	**3.96****	**0.50**	**0.006**	**3.98****	**0.53**	**0.010**	**3.42***	**0.53**	**0.020**	**3.66***	**0.52**	**0.012**
Service characteristics												
Years in operation												
1–30 years [c]	[*reference*]											
30+ years [c]	1.24	0.29	0.461	1.07	0.30	0.831	1.15	0.30	0.645	1.20	0.30	0.536
Number of service delivery sites												
One site	[*reference*]											

	Measure of TA Participation or Use of Feedback Reports											
	Two+ NCQA Webinars			Five+ AIR Office Hours			Five+ Feedback Reports			Five+ AIR Webinars		
Characteristic	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**
2–10 sites	1.07	0.92	0.944	2.30	0.93	0.372	2.38	0.96	0.363	1.82	0.95	0.530
11+ sites	0.49	0.96	0.460	0.99	0.97	0.994	1.11	0.99	0.916	0.83	0.98	0.849
Total revenue per site (in millions)[c]	0.91	0.09	0.307	1.04	0.11	0.719	1.04	0.11	0.702	0.90	0.09	0.281
Number of primary care physicians[c]	1.01	0.03	0.845	1.02	0.03	0.605	1.01	0.03	0.682	1.01	0.03	0.752
Number of specialists[c]	1.18	0.11	0.134	1.20	0.12	0.115	1.18	0.12	0.171	1.08	0.10	0.452
Beneficiary characteristics												
Mean age[c]	0.95	0.08	0.463	1.02	0.09	0.794	1.02	0.09	0.793	0.93	0.08	0.334
Mean HCC score[c,d]	**15.73****	**0.94**	**0.003**	**13.85****	**0.99**	**0.008**	**13.19***	**1.02**	**0.011**	**16.08****	**0.97**	**0.004**
Percentage disabled	0.99	0.02	0.528	1.01	0.02	0.791	1.01	0.03	0.718	0.98	0.02	0.338
Percentage dual-eligible[c]	1.02	0.01	0.100	1.01	0.01	0.282	1.01	0.01	0.207	**1.02†**	**0.01**	**0.058**
Medicare beneficiaries attributed in year preceding demonstration[c]	1.00	0.00	0.208	**1.00***	**0.00**	**0.048**	**1.00***	**0.00**	**0.035**	1.00	0.00	0.158
Geographic characteristics												
PCA regions												
Central	[*reference*]											
Mid-Atlantic	**0.17*****	**0.43**	**<0.001**	**0.15*****	**0.46**	**<0.001**	**0.18*****	**0.48**	**<0.001**	**0.18*****	**0.45**	**<0.001**
Northeast	1.96	0.56	0.225	1.37	0.57	0.586	0.88	0.60	0.824	1.20	0.58	0.758
Southeast	**0.34****	**0.40**	**0.006**	**0.33****	**0.43**	**0.001**	**0.29****	**0.45**	**0.007**	**0.27****	**0.41**	**0.002**
West	**0.40***	**0.45**	**0.044**	**0.32***	**0.48**	**0.017**	**0.30***	**0.51**	**0.018**	**0.36***	**0.47**	**0.030**
West-Central	**0.47†**	**0.39**	**0.052**	**0.45†**	**0.42**	**0.056**	**0.47†**	**0.44**	**0.084**	**0.41***	**0.41**	**0.030**
Rural-Urban Continuum Code												
Metro	[*reference*]											

	Measure of TA Participation or Use of Feedback Reports											
	Two+ NCQA Webinars			Five+ AIR Office Hours			Five+ Feedback Reports			Five+ AIR Webinars		
Characteristic	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**	**OR**	**SE**	**p-value**
Nonmetro–rural	0.90	0.32	0.750	0.76	0.33	0.397	0.81	0.34	0.535	0.92	0.33	0.805
Nonmetro–urban	**2.23†**	**0.47**	**0.090**	1.55	0.50	0.383	1.75	0.52	0.282	**2.35†**	**0.50**	**0.085**
Percentage of households in poverty	0.99	0.01	0.245	0.99	0.01	0.328	0.99	0.01	0.531	0.99	0.01	0.286
PCMH practice readiness												
Predemonstration medical homeness												
Level 0 (<35 points)	[*reference*]											
Level 1 (35–59 points)	1.48	0.41	0.331	1.82	0.41	0.150	1.37	0.45	0.490	1.80	0.44	0.180
Level 2 (60–84 points)	0.88	0.40	0.759	0.94	0.41	0.873	0.68	0.44	0.385	1.26	0.43	0.590
Level 3 (85–100 points)	0.66	0.48	0.382	0.88	0.50	0.791	0.81	0.53	0.686	1.18	0.52	0.751
EHR functionality												
Certified EHR product	**4.39*** **	**0.34**	**<0.001**	**3.85*** **	**0.35**	**<0.001**	**3.63*** **	**0.35**	**<0.001**	**3.98*** **	**0.35**	**<0.001**
PCMH cultural readiness												
Ambulatory care accreditation	**0.41*** **	**0.26**	**<0.001**	**0.36*** **	**0.28**	**<0.001**	**0.36*** **	**0.29**	**<0.001**	**0.41** **	**0.27**	**0.001**
HCCN grantee	1.53	0.26	0.100	**1.72***	**0.27**	**0.043**	**1.72***	**0.28**	**0.049**	1.21	0.27	0.473
Participation in other CMS demonstration	1.60	0.34	0.170	**1.79†**	**0.35**	**0.096**	1.80	0.36	0.107	1.64	0.35	0.160

SOURCE: Analyses by RAND; TA data were compiled by AIR.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] TA/feedback report uptake is defined as participation, respectively, in each of four different components of the intervention: 2+ NCQA webinars, 5+ AIR webinars; 5+ AIR office hours webinars, or utilization of 5+ feedback reports. All analyses excluded sites that had achieved NCQA Level 3 recognition prior to the start of TA/feedback report uptake (NCQA webinars: n=1; AIR office hours: n=19; feedback reports: n=67; AIR content webinars: n=1). Among sites that achieved NCQA Level 3 recognition, counts of TA/feedback report uptake were limited to those observed prior to NCQA Level 3 recognition.

[b] ACA funding is a composite measure of ACA Building Capacity Grantee, ACA New Access Grantee, and/or ACA Immediate Facility Improvement Grantee

[c] Missing data were imputed using the mean value for each characteristic.

[d] Mean HCC score should be interpreted cautiously as the measure was not scaled to account for the distribution of the score. This measure was used as a covariate and not as a main effect.

In summary, high TA uptake (AIR webinars, AIR office hours, viewing feedback reports) was statistically significantly associated with achieving NCQA Level 3 PCMH recognition. Attending NCQA webinars was not statistically significantly associated with NCQA Level 3 PCMH recognition. Sites that participated as ACA grantee, or as a grantee of a HRSA PCMH Initiative, or of PCMH supplemental funding were significantly more likely to achieve NCQA Level 3 PCMH recognition in all models that examined the impact of TA and feedback reports on achieving NCQA Level 3 recognition. Site access to these external sources of funding may have provided sites with additional resources, which facilitated achievement of NCQA Level 3 recognition.

As with the multivariate TA and feedback report analyses described in Chapter Four, analyses in this section were limited by the type of site-level factors that were available consistently across sites. It is likely that other site-level factors that were not available to us—particularly those related to site resources, practice culture, and climate—were associated with progressing toward PCMH recognition. Many of these have been explored in the qualitative and survey analyses, which will be discussed further in Chapters Seven and Eight.

In addition to the caveats already listed about the lack of available site-level factors across sites, we note the lack of availability of consistent, robust metrics for assessing TA or feedback report use across sites and across time. With the help of AIR and CMS, we utilized a set of variables for defining TA and feedback report uptake consistently across time and sites. Nevertheless, we recognize that these metrics do not consistently measure the entire demonstration period. Earlier in the demonstration, implementation teams utilized several other systems for measuring exposure to and uptake of TA and feedback reports. Nonetheless, we acknowledge that the available metrics may not adequately assess uptake or use of TA or feedback reports.

We conducted several sensitivity analyses to test the robustness of our results to selection bias where dropout and/or disqualification from the demonstration occurred. We re-ran all models excluding sites that dropped out of the demonstration or were disqualified by CMS; this exclusion did not change our results in any significant way.

5.3. Chapter Summary and Conclusion

In this chapter, we presented the results of our analyses of the factors associated with PCMH recognition:

- Site-level characteristics (structural, beneficiary, external funding, PCA region, percentage of household poverty in the census tract in which the FQHC operates) were associated with NCQA Level 3 PCMH recognition:
- Participation in the demonstration was statistically significantly associated with achieving NCQA Level 3 recognition.

- Receiving external funding (including ACA grantee status, HRSA PCMH Initiative participation, and PCMH supplemental funding) was associated with increased likelihood of receiving NCQA Level 3 PCMH recognition among both demonstration and comparison FQHCs.
- Among demonstration sites, baseline RAS score was not associated with achieving NCQA Level 3 PCMH recognition; however, having a certified EHR product at baseline was associated with NCQA Level 3 recognition.
- We did not find a statistically significant difference in cumulative care management fee payments for sites that received NCQA Level 3 recognition and those that did not.
- Measured uptake of TA/feedback reports (attending five or more AIR webinars, attending five or more AIR office hours), viewing five or more feedback reports was statistically significantly associated with achieving NCQA Level 3 recognition.

The analyses described in this chapter confirm the role in achieving NCQA Level 3 PCMH recognition played by several factors that were discussed in the qualitative interviews, including a strong EHR system, external funding, and measured uptake of TA and feedback reports. However, as will be shown in the following chapter, there are multiple pathways that can be taken to achieve PCMH recognition, and, in general, a range of different factors come into play that can facilitate or hinder the achievement of recognition.

6. Pathways to Medical Home Recognition

In Chapter Two, we discussed the percentage of demonstration and comparison sites that achieved NCQA Level 3 PCMH recognition, while in Chapters Three, Four, and Five, we described financial and TA supports used by sites to support their pursuit of recognition and analyzed the factors associated with achieving recognition. We noted that there was no single path to recognition but found, instead, that sites attaining NCQA Level 3 PCMH recognition did so through diverse "pathways": for example, sites started the demonstration with varying levels of "readiness" for achieving NCQA Level 3 PCMH recognition and utilized different amounts of TA and other supports for PCMH transformation—both factors that would affect progress toward recognition for the sites. Similarly, demonstration sites that did not achieve recognition failed to do so for a variety of reasons.

To understand these processes better, we used in-depth data on the sites in our qualitative interview sample to longitudinally examine the pathways to PCMH adoption and recognition. That is, we looked at the ways in which sites progressed—or did not progress—to achieve NCQA Level 3 PCMH recognition over time.

We conceptualized sites' progression toward recognition as a developmental process that began with the motivation to pursue the PCMH model and evolved through stages of adoption toward obtaining PCMH recognition. As described in the evaluation framework (see Exhibit 1.2), we conceived of the pursuit of recognition as being affected by both site attributes and contextual characteristics—including elements of PCMH practice and cultural readiness—as well as the structural change process that sites engaged in as they pursued recognition. To convey sites' experience of movement toward PCMH recognition, we used both qualitative and quantitative data collected on the 20 demonstration and 10 comparison sites in the interview sample for the evaluation, as detailed in Appendix A2.

There are three main sections in this chapter. First, we describe demonstration sites' motivation to participate in the FQHC APCP Demonstration. Second, we describe the progress of both demonstration and comparison sites through five stages of adoption. Third, to understand the role and dynamics of key factors from our conceptual model on trajectories toward PCMH recognition, we present the findings of a qualitative comparative analysis (QCA) (Ragin, 1987; Rihoux and Ragin, 2009). The QCA allowed us to identify groupings of factors (also known as "pathways" or "recipes") associated with either attaining or not attaining NCQA Level 3 PCMH recognition among sites in our qualitative sample.

Additional information on the methods used in these analyses can be found in Appendix A2. We also illustrated our findings on pathways to medical home recognition through a series of qualitative site case summaries, which can be found in Appendix A8.

6.1. Sites' Motivation to Participate in the FQHC APCP Demonstration

Sites offered many reasons, and often multiple reasons, for applying to the demonstration, with most respondents mentioning at least two. These reasons, in general order of frequency cited, included:

- national movement toward PCMH model in primary care, both as a care model and for reimbursement
- opportunity to obtain NCQA recognition
- opportunity for QI and practice transformation
- demonstration enhanced care management fee payments
- demonstration TA
- implementation structure and accountability
- site orientation toward early adoption.

Some of the reasons given by demonstration sites for participating in the FQHC APCP Demonstration are common motivations for adopting organizational innovations in general—e.g., perceived trends in peer practices (Greenhalgh et al., 2004), compatibility of the innovator with existing organizational character and values (Denis et al., 2002; Rogers, 2003)—as well as motivations particular to PCMH, such as perceived value of PCMH and PCMH-related financial incentives (Wise et al., 2011). Other reasons, such as TA and the implementation structure and accountability, reflect ways in which features of the demonstration attracted or motivated sites to apply and take up the invitation to pursue PCMH transformation and recognition. We briefly discuss each of these reasons below.

National Movement Toward PCMH

One of the most frequently cited reasons for participation was the opportunity to be part of a national movement toward the PCMH model in primary care. There was a general sense among demonstration sites that the PCMH model was the "wave of the future" for improving and delivering care, with PCMH measures and recognition serving as the foundation for emerging systems of accountability and reimbursement. Even though explicit mandates have not yet been established, many site respondents thought there was "no choice" and that it would be best to be "ahead of the curve" by joining the demonstration. Several respondents also noted the importance of the medical home movement within the FQHC environment.

Opportunity to Obtain NCQA Recognition

Beyond practice transformation, many FQHCs were specifically motivated by the opportunity to obtain NCQA recognition. A common sentiment was that, because many FQHCs were "already doing" much of what is required by the PCMH model, it would be efficient for them to obtain recognition along the path of transformation as a means to document and

demonstrate progress to patients, funders, and the wider health care community. Receiving NCQA recognition was also seen as a marker of quality—even more so than other medical home accreditation options—that would be meaningful to staff, patients, and payers. It was hoped that having achieved a "gold standard" form of medical home recognition might pay off through the possibility of higher reimbursement from payers. Several site respondents stated a belief that payers prefer NCQA over other forms of medical home recognition.

Opportunity for QI and Practice Transformation

For a significant number of FQHCs, the appeal of the demonstration was the opportunity to engage in serious practice change, QI, and better service to clients, more so than a desire for external recognition or reimbursement. These sites were interested in using the demonstration as an opportunity for "real" and "big picture" practice transformation. They were motivated by a "belief in the concept," even if, at the outset of the initiative, they were not aware of all that the PCMH model would entail.

Demonstration Enhanced Care Management Fee Payments

Regardless of whether other motivations were described, the quarterly care management fee payments provided by CMS were frequently cited as a motivating factor for demonstration participation. Most site respondents who mentioned the payments considered them to be a relatively small amount, but some felt that the payments helped tip the decision in favor of participation.

Demonstration TA

The TA provided by the demonstration was frequently mentioned by site respondents as a factor motivating participation, although respondents typically did not identify a preference among different types of TA support. While many of the respondents considered the TA to be merely "helpful"—even a "pleasant surprise"—several demonstration site respondents described the TA offered as one of their primary motivations for joining.

Implementation Structure and Accountability

Related to TA, a specific theme emerged regarding the value of the demonstration in affording a "mechanism" for structuring the PCMH effort, providing feedback on progress, and introducing accountability for meeting recognition objectives. Respondents citing this theme described wanting to approach PCMH change "not flying solo, but rather in a more controlled environment." They noted that the demonstration helped establish a "set-in-stone date" for achieving recognition.

Site Orientation Toward Early Adoption

A small number of demonstration site respondents self-described their organizations as "early adopters" that "push excellence" and are prone to joining interventions for the sake of change and innovation. Two of these sites looked to the demonstration to support their PCMH change efforts and help keep them at the forefront of "innovation" and "enhanced models of care." For one "early adopter," the attractiveness of the demonstration was the opportunity to share in improvement with the wider FQHC community and to use the demonstration as a vehicle to sustain PCMH transformation and maintain recognition.

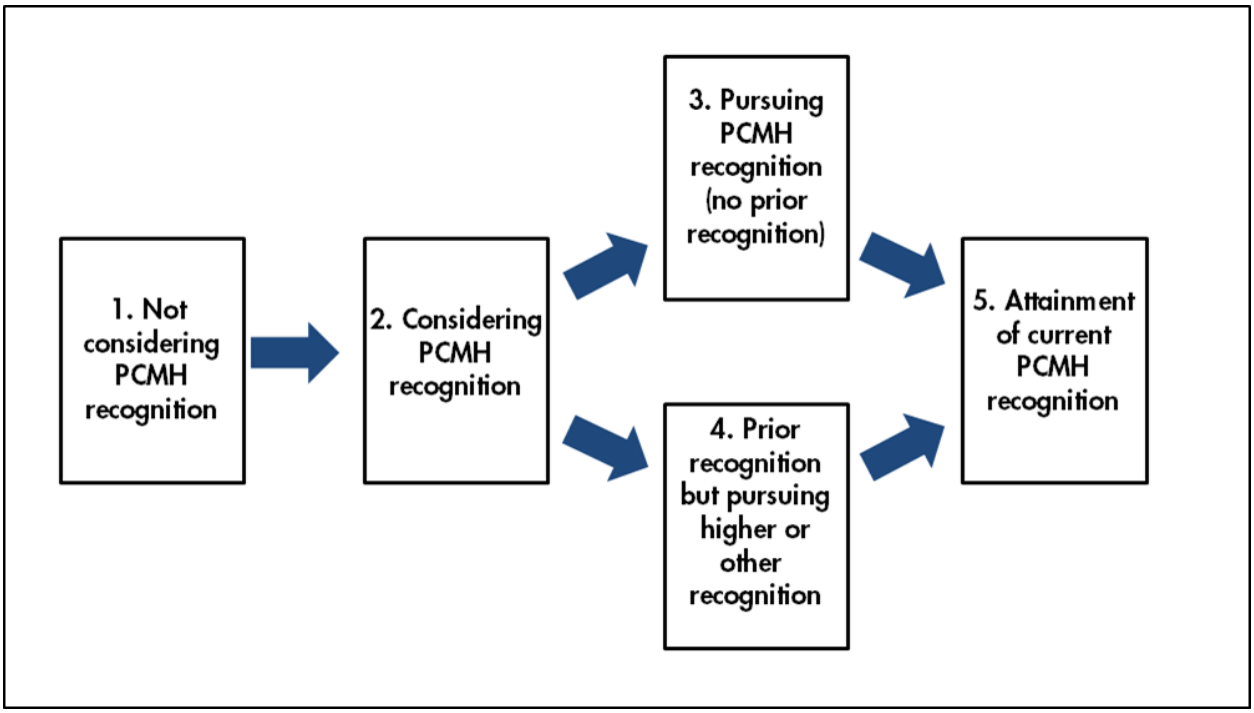
6.2. Stages of Adoption Toward PCMH Recognition

While the decision to pursue a PCMH recognition model is a key step to attaining recognition, it is not the only—or even first—step in the process. As Rogers and others have emphasized (Rogers, 2003; Mendel et al., 2008), adoption of an innovation is not a single decision, but rather a progression of stages, typically starting with awareness of and learning about the innovation, followed by decisions to adopt or not, and (if the decision is to adopt) subsequent implementation, reinforcement, sustainment, and spread of the innovation. The following analysis examines differences in the trajectory of the adoption process between demonstration and comparison sites—including key steps prior to deciding to pursue recognition—that would not be apparent from examining only whether or not sites attained recognition. [39] This analysis also provides insight into one specific potential source of selection bias among participating sites, namely, decisionmaking mindsets in considering and/or pursuing recognition prior to the demonstration. We used site leader interview data from 18 of the 20 demonstration sites and from the ten comparison sites in the evaluation's qualitative sample to describe and compare the progression of demonstration and comparison FQHCs across the five stages of adoption for PCMH recognition in Exhibit 6.1, which we adapted from Rogers' framework.[40]

[39] This analysis describes the trajectory of sites toward attainment of recognition. We qualitatively examined factors affecting this trajectory in the cross-case analysis presented later in the chapter.

[40] Key data for this analysis were missing for two of the demonstration sites, as explained below.

Exhibit 6.1. Five Stages of Adoption for PCMH Recognition



SOURCE: Based on Rogers' (2003) stages of adoption.

1. **Not considering PCMH recognition.** Although all sites reported having had at least some knowledge of the PCMH model and PCMH recognition prior to the demonstration, several had not yet considered whether to pursue recognition or had considered it at a previous time but had decided not to pursue.
2. **Considering PCMH recognition.** A number of sites were considering PCMH recognition (with certain types in mind or in a more general learning stage), but had not made a decision to pursue any particular type of recognition.
3. **Pursuing PCMH recognition (no prior recognition).** Other sites that had not previously attained PCMH recognition had decided to pursue recognition for the first time (with or without a planned date to submit).
4. **Prior recognition but pursuing higher or other recognition**. Some sites had attained a prior recognition, but were pursuing a higher recognition status (e.g., from the NCQA 2008 to 2011 standards, or moving up from NCQA Level 1 or 2 to Level 3 PCMH recognition) or an additional type of recognition from another accrediting body (e.g., NCQA, AAAHC, or Joint Commission).
5. **Attainment of current PCMH recognition.** The last adoption stage category was for sites that obtained the NCQA (Level 1, 2, or 3) or other PCMH recognition (AAAHC or Joint Commission) they had been pursuing.

To identify the stage of adoption for each site before and at the end of the demonstration, we analyzed interview responses to questions on: (1) "reasons for participating in the FQHC APCP Demonstration" (demonstration sites only, at baseline), and (2) "attainment or plans to attain PCMH recognition" (both demonstration and comparison sites, at baseline and follow-up). We

also analyzed data on formal recognition attainment, demonstration application data (on recognition status prior to the initiative), and data from NCQA and other recognition bodies (on status at the end of the demonstration) for both demonstration and comparison sites. We were able to identify the stage of adoption at the end of the demonstration period for all sites, but could not identify the predemonstration stage of adoption for two demonstration sites, which we excluded from this analysis.

Exhibit 6.2 presents the distribution of demonstration and comparison sites across the stages of adoption both before and at the end of the FQHC APCP Demonstration period. The results indicate that:

- Demonstration and comparison sites were roughly similar in their stages of adoption *before* the FQHC APCP Demonstration.
- However, by the start of the demonstration, a large proportion of demonstration sites had progressed to active pursuit of NCQA recognition.
- Over the course of the demonstration, both demonstration and comparison sites showed progression up the stages of the adoption, but demonstration sites appeared on a faster trajectory toward PCMH recognition.

As illustrated in Exhibit 6.2, the demonstration and comparison sites in the qualitative sample were roughly similar in terms of stages of adoption prior to the FQHC APCP Demonstration, with the vast majority of sites having no PCMH recognition of any type or level**.** A small proportion of sites had a prior recognition but were pursuing a higher or additional recognition.[41] No sites had achieved NCQA PCMH recognition (2011 standards) at any level. Prior to the start of the demonstration, demonstration sites had a higher proportion of sites with some form of prior recognition, while comparison sites had a higher proportion of sites that were already actively pursuing—as compared with just considering— recognition.

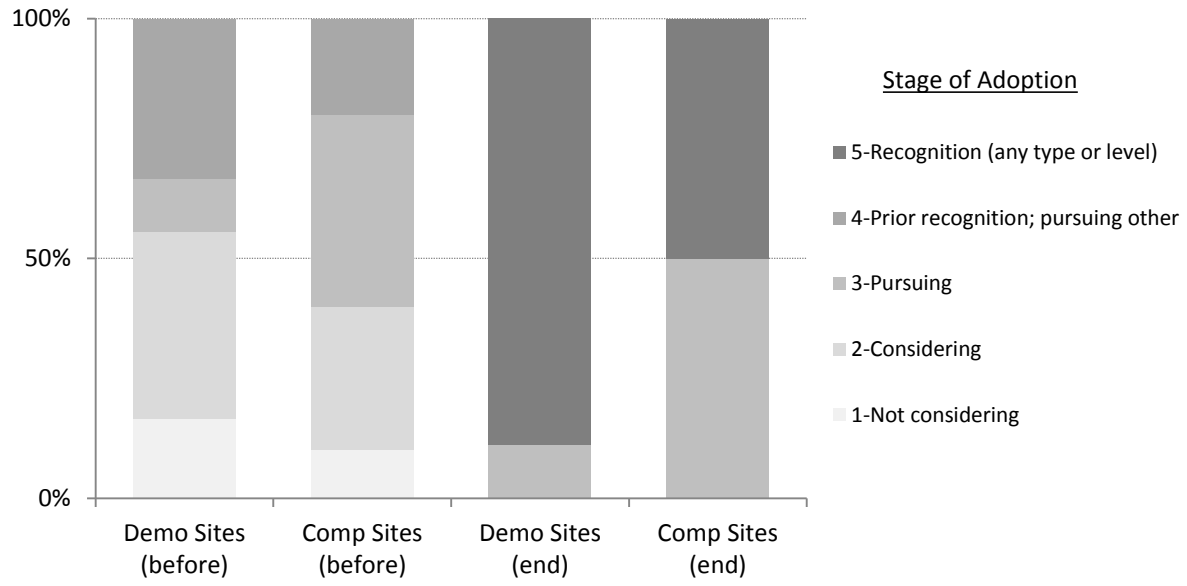
As illustrated further in Exhibit 6.2, both the demonstration and comparison sites in the qualitative sample exhibited progress through the stages of adoption. In both groups, all sites that were *not considering* recognition or were *only considering* recognition had moved to at least the pursuit stage by the end of the demonstration period.

However, demonstration sites appeared to progress through the stages of adoption faster than comparison sites. A substantially higher proportion of demonstration sites in the sample attained recognition by the end of the demonstration period than did comparison sites: 89 percent of demonstration and 50 percent, respectively, of comparison sites for any recognition type or level (as illustrated in Exhibit 6.2); and 67 and 10 percent, respectively, for NCQA Level 3 PCMH

[41] Most of these sites had prior NCQA recognition to the 2008 standards and were pursuing the 2011 standards recognition; one demonstration site had prior Joint Commission PCMH recognition but joined the FQHC APCP Demonstration in order to also pursue NCQA PCMH recognition.

recognition only. These rates were similar to those reported for the broader evaluation sample as a whole—e.g., 70 and 11 percent for NCQA Level 3 PCMH recognition only.

Exhibit 6.2. Stages of Adoption for PCMH Recognition (of Any Type or Level) Among Demonstration and Comparison Sites, Before and End of Demonstration Period



NOTES: This descriptive analysis includes data from 18 of the 20 demonstration sites and all 10 comparison sites in the qualitative interview sample. In order to indicate the general progression of sites through stages of adoption, the recognition category shown in this exhibit includes any type of PCMH recognition (NCQA regardless of Level 3, 2, or 1; AAAHC; or Joint Commission). Rates of recognition in the qualitative sample were similar to those reported for the broader evaluation—e.g., 67 percent of demonstration and 10 percent of comparison sites in the qualitative sample achieved NCQA Level 3 by end of the demonstration, compared with 70 and 11 percent, respectively, for the broader evaluation sample.

As expected, a key effect of the FQHC APCP Demonstration at its very beginning was to encourage sites that had not been actively pursuing PCMH recognition to do so. Prior to the demonstration, half of demonstration sites (and a similar proportion of comparison sites) were not actively pursuing PCMH recognition (see Exhibit 6.2), although, as required, all demonstration sites were pursuing PCMH recognition after the start of the demonstration. As one demonstration site respondent commented, the invitation to the demonstration was a major impetus to finally pursuing recognition:

> We've been talking about patient-centered medical home recognition since 2009, and we identified quickly in 2009 that we wanted to go the NCQA. But it wasn't until we came on board [the demonstration] that we really put a set-in-stone date for when we wanted to achieve our recognition, partly driven by the demonstration project and then just our own internal goal.

In other cases, sites had been considering several types of recognition and settled on the NCQA standards partially due to the opportunity afforded by the demonstration:

> We actually were looking at [the recognition process for] AAAHC and the Joint Commission. I particularly liked the AAAHC process as much as I liked NCQA. But, as part of the CMS demonstration project, we had to go with NCQA.

6.3. Key Dynamics and Pathways to PCMH Recognition

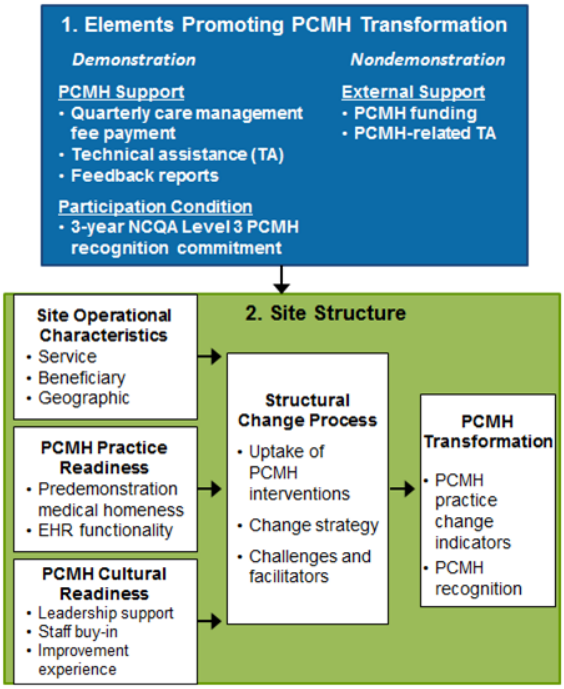
The next step in understanding the process of PCMH recognition was to examine more closely the dynamics among key drivers of PCMH recognition that might result in specific pathways used by sites to attain recognition. To analyze these issues, we were especially interested in understanding the components of the "Site Structure" box of our conceptual framework (see Exhibit 6.3) and the ways in which various groups of components interacted along the pathway to recognition.

We used two main approaches to understanding these dynamics and pathways. First, we conducted an exploratory "cross-case analysis" (Yin, 2013; Eisenhardt, 1989) to identify the combined influence of factors in our conceptual model related to attaining NCQA Level 3 PCMH recognition, based on a site's starting level of medical home practice at the beginning of the demonstration period (i.e., predemonstration "medical homeness"). The analysis provided initial insight into the key factors related to achieving NCQA Level 3 PCMH recognition, how to measure indicators of those factors, and how they differ across the cases in our qualitative interview sample. We report a detailed account of the conventional cross-case analysis in Appendix A9. See Appendix A4 also for details on quantitative site-, grantee-, and area-level measures used in these analyses.

Second, we used qualitative comparative analysis (QCA) (Ragin, 1987; Rihoux and Ragin, 2009; Devers et al., 2013) to identify specific groupings of factors (also known as "recipes" or "pathways") associated with PCMH recognition outcomes, necessary and/or sufficient conditions for particular outcomes, and separate pathways associated with attaining NCQA Level 3 PCMH recognition versus not attaining Level 3 recognition. A full description of the methods used in these analyses can be found in Appendix A2.[42]

[42] All QCA models reported here were conducted using the R statistical software application (R Core Team, 2013).

Exhibit 6.3. Conceptual Model of Factors Affecting Attainment of PCMH Recognition



Components of Organizational Readiness

Prior research on organizational change suggests that organizational readiness is a key factor in the successful adoption of an innovation (Greenhalgh et al., 2004); however, the way in which "organizational readiness" is defined varies widely (Weiner et al., 2008). Informed by this literature, as well as our thematic interview and site visit summary analyses, we conceptualized organizational readiness for PCMH transformation as consisting of the components shown in the leftmost column of the "Structure" box in Exhibit 6.3:

- **Site operational characteristics**. These include service, beneficiary, and geographic characteristics. Size, in particular, has been linked to successful adoption of PCMH capabilities in primary care practice (Friedberg et al., 2009). We focused on whether a site had an urban/rural location as well as grantee size (small versus medium/large). We did not include site characteristic variables in our final QCA analyses, but we note in the relevant exhibits in this chapter the distribution of site characteristics among the cases making up each pathway.[43]

[43] The initial QCA models that included indicators across all domains showed that the site characteristic variables included in the final calibrated set (i.e., urban versus rural sites, and small versus medium or large grantee organizations) did not appear to change the types of pathways identified; rather, they tended to be associated with different pathways. Thus, the analyses in this chapter do not include the site characteristic variables.

- **PCMH practice readiness**. This refers to the level of key medical home care practices in place prior to the beginning of the demonstration for demonstration sites and prior to the first interview for comparison sites (low versus moderate/advanced), as well as whether the site had a fully functional EHR system prior to the demonstration period.
- **PCMH cultural readiness**. This was defined as a site's experience with QI and quality assurance (QA) initiatives, any previous NCQA PCMH recognition received (Levels 1 or 2), leadership support for PCMH transformation (including the presence of champions), and staff support (low versus high, across the whole period). We defined these constructs with a focus on a site's *existing* capabilities, because organizational capacity is a key component in the successful adoption of innovations, such as PCMH (Martsolf et al., 2015; Zickafoose et al., 2013).

Components of the Structural Change Process

We identified three main components within the structural change process.

- **Uptake of external PCMH supports.** This includes TA, feedback report use, and PCMH-related financial assistance from the demonstration or other sources (low versus high).
- **Change strategy employed.** We analyzed strategies related to change agent capacity (low versus high) and change team formation (stable and cohesive versus not). Change agent capacity indicates the degree of capacity for managing practice change exhibited by the individual leading a site's PCMH effort. It is based on the individual's change credibility (including the person's level in organization, clinical background or relationships, and amount of time in the organization/position), change experience (including QI experience, broader change management experience, and specific PCMH experience), and time and prioritization the individual can dedicate to the PCMH effort. Change team formation indicates the degree to which a site had a stable and cohesive PCMH implementation team (based on such factors as turnover among team members).
- **Challenges and facilitators that sites encountered**. This includes total change management challenges, as well as EHR challenges, team-based challenges, patient-related challenges, and NCQA challenges.

PCMH Transformation

For these analyses, we considered both sites that achieved and those that did not achieve NCQA Level 3 PCMH recognition by the end of the demonstration.[44]

[44] As shown in Exhibit 6.3, PCMH recognition is not the only indicator of structural transformation (and may also be an imperfect indicator, given occasional unintended consequences of recognition on transformation—see Section 2.3). Other indicators of PCMH transformation may include measures of PCMH practice change, e.g., scores on the demonstration's biannual Readiness Assessment Survey (RAS) or expert assessments such as ratings of site medical home practices by TA providers.

Overview of Results of Cross-Case and Qualitative Comparative Analyses

The core findings of the conventional cross-case analysis showed that the starting level of medical homeness (i.e., level of key medical home care practices), while important, was not necessarily the prime determinant of attaining NCQA Level 3 PCMH recognition. That is, sites were able to compensate for one and sometimes two deficits in areas of readiness through strengths in other areas of readiness, change strategies, or uptake of external PCMH supports. However, sites with deficits in multiple areas, such as low cultural readiness *and* low baseline levels of medical home care practices, were less likely to attain recognition by the end of the demonstration period. (See Appendix A9 for complete results.)

The QCA results distinguished five specific combinations of factors, or pathways, to attaining, and four specific pathways to not attaining NCQA Level 3 PCMH recognition. Analysis across these pathways also identified two conditions that were necessary, although not sufficient, for these outcomes: high change agent capacity (for attaining Level 3 recognition) and low previous QI or NCQA experience (for not attaining Level 3 recognition). We discuss these types of pathways below.

Results for Sites Achieving NCQA Level 3 PCMH Recognition

Exhibit 6.4 presents results of the QCA model for the 14 demonstration sites in the qualitative sample that achieved NCQA Level 3 PCMH recognition by the end of the demonstration. The columns represent the different dimensions for PCMH practice readiness, PCMH cultural readiness, and change process. Each row of the exhibit groups together sites that followed a similar pathway toward recognition. A check mark or star in the main cells of the table denotes that all sites in the row have that attribute in common, while the word “mixed” in a cell indicates that sites in that pathway (i.e., row) varied on the value of that attribute.

Exhibit 6.4. QCA Results for Achieving NCQA Level 3 PCMH Recognition by the End of the Demonstration

	PCMH Practice Readiness		PCMH Cultural Readiness			Change Process			Case Notes	
Pathways for *Attaining* Level 3 Recognition	**Baseline Practice "Medical Homeness"**	**EHR (functional at baseline)**	**Prior QI/NCQA Experience (high)**	**Leadership Support (high)**	**Staff Support (high)**	**Change Agent Capacity (moderate to high)**	**Change Team Formation (stable and cohesive)**	**Uptake of PCMH Supports (high)**	**# of Cases (n=14)**	**Site Characteristics**
Independent Superstars Sites with strong foundations (both practice and cultural), did not need PCMH supports	**H**	✓	✓	✓	*Mixed*	★	✓		5	Mixed urban and rural All medium/large
Studious Superstars Strong foundations, but high users of PCMH supports	**H**	*Mixed*	✓	✓		★	✓	✓	3	Two of three rural Two of three small
Groundswell Compensated for low leadership support through high uptake of PCMH supports, and combination of experience, change team	**H**	✓	*Mixed*		✓	★	*Mixed*	✓	3	Two of three urban Mixed sizes
Bootstraps Sites lacked practice readiness, but had strong internal support, change process, and use of external supports	**L**			✓	✓	★	✓	✓	2	Both rural Mixed sizes
Long Shot Overcame low medical homeness with few external supports, but threaded the needle with baseline EHR, strong leadership support and change strategies	**L**	✓		✓		★	✓		1	Rural Medium/large size

★= Necessary (although not sufficient) condition; H=High; L=Low; ✓=Factor present (at indicated value in header); Blank cells indicate that the value in the header for that factor is not present (e.g., sites in the Groundswell pathway did not have *high* leadership support).

The analysis identified five different pathways by which demonstration sites achieved NCQA Level 3 PCMH recognition. Although each pathway is unique, all had one attribute in common—moderate to high change agent capacity—indicated by the star in that column for all rows. That is, within the qualitative sample of demonstration sites, moderate to high change agent capacity was a necessary but not sufficient condition for attaining Level 3 recognition.

Sites that started the demonstration with high "medical homeness"—that is, care practices that were largely consistent with PCMH principles—are shown in the first three rows of the Exhibit 6.4 above. Three trajectories were identified:

- **Independent Superstars.** In addition to high change agent capacity and high medical homeness at baseline, these five sites also shared functional EHR systems at baseline, prior QI/NCQA experience, high leadership support, and stable and cohesive change teams. Some but not all sites had high staff support for PCMH. The fact that they exhibited strengths in so many areas may explain another shared attribute, the relatively low use of PCMH supports.
- **Studious Superstars.** In addition to high change agent capacity and high medical homeness at baseline, these three sites shared prior QI/NCQA experience, high leadership support, and stable and cohesive change teams. Unlike the Independent Superstars, this group of sites had high uptake of PCMH supports, despite their overall practice and cultural readiness and strong change management process. Across the Studious Superstars sites, only some had a functional EHR system at baseline, and none exhibited high levels of staff support.
- **Groundswell.** The remaining three sites that had high change agent capacity and a high level of medical homeness at baseline followed a different path to NCQA Level 3 PCMH recognition than the two Superstar sites. The three Groundswell sites showed high practice readiness through high levels of medical homeness and functional EHR systems at baseline, but all lacked the leadership support and some lacked the prior QI/NCQA experience found in the Superstar sites. Groundswell sites, however, had high staff support and high uptake of PCMH supports, and some had stable and cohesive change teams. Groundswell sites had many strengths but more weaknesses than Superstar sites, but were able to attain NCQA Level 3 recognition, likely because of the combination of staff support and uptake of PCMH supports, which bolstered high practice readiness.

The two bottom rows of Exhibit 6.4 show the pathways to achieving NCQA Level 3 PCMH recognition for sites that began the demonstration with low medical homeness:

- **Bootstraps.** These two sites exhibited low levels of medical homeness, lacked a functional EHR system at the beginning of the demonstration, and had little to no experience with prior QI or NCQA projects. However, Bootstraps sites had high levels of leadership and staff support, as well as high change agent capacity, stable and cohesive change teams, and high uptake of PCMH supports. Despite low practice readiness, high cultural readiness and exemplary change process strategies allowed these sites to achieve Level 3 recognition by the end of the demonstration period.

- **Long Shot.** The last row in the table represents only one site, which achieved Level 3 recognition despite low medical homeness, lack of QI and NCQA experience, low staff support, and relatively low uptake of PCMH supports. The Long Shot site had a fully functional EHR system at baseline—important strength—as well as leadership support, a capable change agent, and a stable and cohesive change team. Closer examination of qualitative data for this exceptional site showed that this FQHC was in the midst of several strategic expansion and improvement efforts. Site leaders described PCMH transformation as initially being low on their list of priorities. However, about a year into the demonstration period, an effective change agent was appointed to lead the NCQA application effort. This site also benefited from a strong working relationship with a local hospital system, which supported EHR integration and allowed this site's change agent to participate in the hospital's own outpatient PCMH efforts coinciding with the demonstration period. While this site may have been too busy to take full advantage of the demonstration or other external PCMH supports, they appeared to benefit from quasi-internal PCMH supports, such as a close relationship with the local hospital system.

Results for Sites *Not* Achieving NCQA Level 3 PCMH Recognition

Exhibit 6.5 presents results of the QCA model for the six demonstration sites in the qualitative sample that did not achieve NCQA Level 3 PCMH recognition by the end of the demonstration. The meaning of the columns is the same as in the previous results table, with one exception: the column for prior QI or NCQA experience represents a low value on this factor. Sites lacked strong experience with prior QI projects or the NCQA application process. All sites that did not achieve Level 3 recognition shared this lack of experience; in predicting not achieving Level 3 recognition, lack of experience is a necessary condition (as indicated by the hollow star). However, given that sites also faced various other deficits or challenges in their practice readiness, cultural readiness, or change processes, it was not a sufficient condition.

Exhibit 6.5 is ordered with the sites that started with a low baseline level of medical homeness at the top of the table. It might be expected that these sites would be less likely to attain Level 3 recognition by the end of the demonstration, given how much greater a transformation of care practices would be required to become a PCMH. However, the results indicate that there were at least two pathways to this outcome for sites that started in this position:

- **Unsurprising.** In addition to low medical homeness and lack of experience, this site lacked key elements of practice and cultural readiness, and, with the exception of a capable change agent, exhibited a poorly executed change process. This site's failure to achieve NCQA Level 3 PCMH recognition is not unexpected.
- **Uphill Battle.** The site represented on the second row in the table also had low medical homeness and little experience, but had more strengths to build from than the Unsurprising site, including a functional EHR at baseline and a good change process.

However, this site was unable to attain Level 3, perhaps because of the lack of cultural readiness (i.e., low experience, low leadership support, low staff support).

The last two rows in Exhibit 6.5 represent pathways for sites that started the demonstration with high medical homeness and thus, in some sense, are more surprising in not having achieved Level 3 recognition:

- **Mismatched Strengths.** The two sites in this cluster had high medical homeness and staff support, but lacked strong QI/NCQA experience and a functional EHR system at the beginning of the demonstration period. The two sites in this cluster were mixed across the other attributes, but neither combination of supplementary strengths exhibited by these sites was enough to achieve NCQA Level 3 PCMH recognition. In both cases, sites had some strength in each area—practice readiness, cultural readiness, and change process—which was perhaps too diffuse to provide a firm foundation for PCMH transformation.
- **Missed Opportunity**. The last row of the table represents two sites that had a number of strengths. Despite lacking QI or NCQA experience, these sites had high levels of medical homeness, functional EHR systems at baseline, and leadership support, and each site had either staff support or a stable and cohesive change team. Both of these sites also lacked high change agent capacity, and neither was a strong user of PCMH supports. In these two sites, the poorly executed change process signals a missed opportunity for otherwise well-equipped sites to transform into medical homes.

Exhibit 6.5. QCA Results for Not Achieving NCQA Level 3 PCMH Recognition by the End of the Demonstration

	PCMH Practice Readiness		PCMH Cultural Readiness			Change Process			Case Notes	
Pathways for Not Attaining Level 3 Recognition	**Baseline Practice "Medical Homeness"**	**EHR (functional at baseline)**	**Prior QI/NCQA Experience (low)**	**Leadership Support (high)**	**Staff Support (high)**	**Change Agent Capacity (moderate to high)**	**Change Team Formation (stable and cohesive)**	**Uptake of PCMH Supports (high)**	**# of Cases (n=6)**	**Site Characteristics**
Unsurprising Strikingly low practice and cultural readiness and poor change process	**L**		☆			✓			1	Urban Small size
Uphill Battle Despite strong change process, did not overcome lack of baseline "medical homeness" and cultural readiness	**L**	✓	☆			✓	✓	✓	1	Urban Medium/large size
Mismatched Strengths Low EHR and lack of experience were not counterbalanced by strengths in other areas	**H**		☆	*Mixed*	✓	*Mixed*	*Mixed*	*Mixed*	2	Mixed urban and rural Med/large size
Missed Opportunity Strong practice readiness, but low experience, change agency capacity, and use of supports. With right change agent or better uptake of PCMH supports, these sites may have made it	**H**	✓	☆	✓	*Mixed*		*Mixed*		2	Rural Medium/large size

☆= Necessary (although not sufficient) condition; H= High; L= Low; ✓= Factor present (at indicated value in header); Blank cells indicate that the value indicated in the header for that factor is not present (e.g., sites in the Unsurprising pathway did not have *high* Leadership Support).

Conclusions about Pathways to Recognition

These analyses based on QCA methods identified two conditions necessary, if not sufficient, for recognition outcomes in the qualitative sample: *high change agent capacity* (for attaining NCQA Level 3 PCMH recognition) and *low previous QI or NCQA experience* (in not attaining Level 3 recognition by end of the demonstration). These two conditions thus represent signals that can be used by TA providers and leaders of similar demonstrations to monitor progress of sites and differentiate sites at varying levels of risk for poor outcomes or requiring varying intensity and types of assistance.

The QCA results also suggest that sites attaining NCQA Level 3 PCMH recognition and having started at higher levels of medical homeness (i.e., care practices aligned with the medical home model) tended to be strong in multiple areas of readiness, regardless of whether they utilized external PCMH supports. Sites that achieved NCQA Level 3 PCMH recognition but started with lower levels of medical homeness needed strength in three specific cultural readiness and change factors (high leadership support, stable change teams, and high change agent capacity), in addition to at least one other practice readiness or change process factor (either a baseline functional EHR system or high use of external PCMH supports). The QCA results for cases in the qualitative sample that did not achieve NCQA Level 3 PCMH recognition indicate that even some cases that started with relatively high medical homeness at baseline were not able to achieve this outcome by the end of the demonstration without sufficiently strong cultural readiness and a robust change process.

With respect to challenges experienced by sites (presented separately in Appendix A2), those that achieved NCQA Level 3 PCMH recognition appeared to have encountered varied challenges reflective of the particular structure and dynamics of their practice context. Sites not attaining such recognition appeared to have not addressed deeper change management and care team issues, and were stymied in their PCMH journey when they encountered a limited set of stumbling blocks.

6.4. Chapter Summary and Conclusion

In this chapter, we qualitatively examined the processes and pathways to PCMH adoption and recognition:

- Site respondents described many reasons for participating in the demonstration, with most demonstration respondents mentioning at least two. These reasons included:
  - national movement toward PCMH in primary care, both as care model and for reimbursement
  - opportunity to obtain NCQA recognition
  - opportunity for QI and practice transformation
  - demonstration enhanced care management fee payments

  - access to demonstration TA
  - implementation structure and accountability
  - site orientation toward early adoption.
- Demonstration and comparison sites were roughly similar in their stages of adoption before the demonstration. Over the course of the demonstration, both demonstration and comparison sites showed progression through the stages of adoption, but demonstration sites appeared to be on a faster trajectory toward NCQA Level 3 PCMH recognition.
- The pattern of findings in the conventional cross-case analysis suggested that the starting level of medical homeness (i.e., care practices aligned with the PCMH model), while important, was not necessarily the prime determinant of attaining medical home recognition. That is, sites were able to compensate for one and sometimes two deficits in areas of readiness through strengths in other areas of readiness, change strategies, or uptake of external PCMH supports. However, sites with deficits in multiple areas, such as low cultural readiness and low baseline levels of medical home practices, were less likely to achieve NCQA Level 3 PCMH recognition by the end of the demonstration period.
- The analyses based on QCA methods found variation in the pathways taken by sites that achieved and those that did not achieve NCQA Level 3 PCMH recognition: we distinguished five pathways to achieving recognition and four pathways to not achieving recognition.
- Analysis across these pathways identified two conditions necessary, though not sufficient, for recognition outcomes in the qualitative sample: high change agent capacity (for attaining Level 3 recognition) and low previous QI or NCQA experience (in not attaining Level 3 recognition by end of the demonstration).
- The QCA results also suggested that sites attaining NCQA Level 3 recognition and having started at higher levels of medical homeness tended to be strong in multiple areas of readiness, whether or not they utilized external PCMH supports.
- Sites not attaining such recognition appeared not to have addressed deeper change management and care team issues, and were stymied in their PCMH journey when they encountered a limited set of stumbling blocks.

7. Change Management: Challenges and Facilitators

The financial and TA resources provided to the demonstration sites were intended to support PCMH transformation. As indicated in our conceptual model (Exhibit 1.2), these intervention components and supports functioned within the context of a site's existing operational characteristics, levels of practice, and cultural readiness as part of a structural change process leading to PCMH recognition. The transformation process was itself challenging, as FQHCs typically needed to make numerous changes to clinic structure in order to deliver care according to the medical home model and attain recognition.

In this chapter we discuss the process of practice change and PCMH implementation within FQHCs. We consider change at two levels: general management of the practice change and improvement process within FQHCs to achieve medical home transformation, and issues associated with implementing specific PCMH-related care practices as delineated by the 2011 NCQA standards used.

Exhibit 7.1 shows the components of the evaluation's conceptual model for site structure supportive of PCMH change. Challenges and facilitators could arise relevant to both site-level characteristics, and to the structural change process itself.

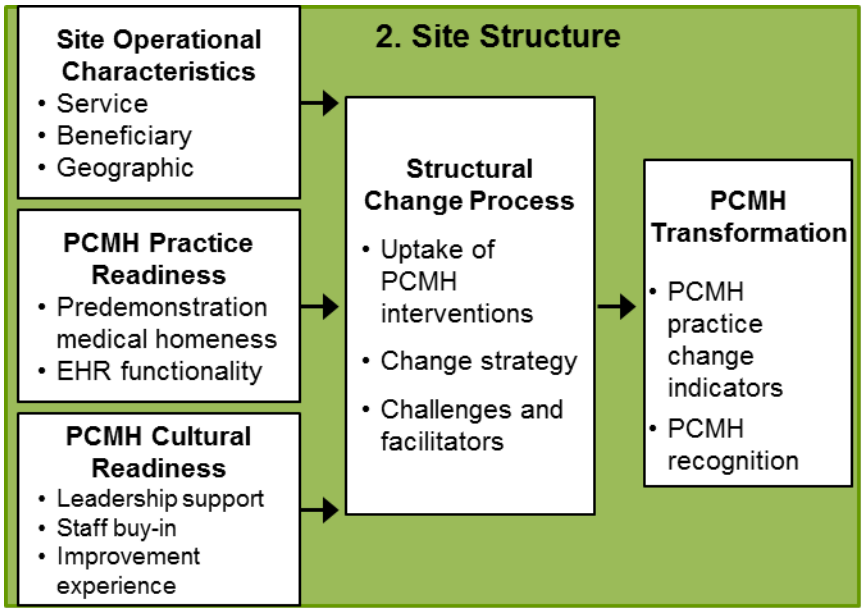
In broad terms, PCMH transformation shares many core processes of organizational innovation and change management with primary care improvement and redesign efforts. "Cultural readiness" is a particularly important component of change. According to AHRQ, a critical element of the PCMH model is an overall commitment to quality, reflected in a strong culture and mindset of continuous QI (indicated by "improvement experience" in the PCMH cultural readiness box in Exhibit 7.1). That culture and mindset supports, tracks, and maintains such activities as using evidence-based medicine and clinical decision support tools to guide shared decisionmaking with patients and families, engaging in performance measurement and improvement, measuring and responding to patient experiences and satisfaction, and practicing population health management (Taylor et al., 2013).

Likewise, a growing body of research has emphasized the importance of leadership and practice capacity for managing the PCMH change process, inspiring and coordinating change across the variety of staff and components that comprise the PCMH model, and aligning broader organizational systems and policies to support successful PCMH implementation (Wagner et al., 2012; McMullen et al., 2013; Cronholm et al., 2013; Blesser et al., 2014; O'Malley et al., 2014; Tuepker et al., 2014). In Exhibit 7.1, leadership support and staff buy-in are additional components of PCMH cultural readiness.

To identify change management issues attending PCMH transformation in the FQHCs participating in the FQHC APCP Demonstration, we used qualitative data from our interviews

with site and PCA leaders, clinicians, and staff in the first and final years of the demonstration. More detail on the qualitative methods can be found in Appendix A2.

Exhibit 7.1. Components of Site Structure Supportive of PCMH Change



In this chapter, we first describe key general challenges and facilitators reported by demonstration sites and comparison. Then, we discuss PCMH-related practice changes in more detail, as they apply, respectively, to demonstration and comparison sites. Additional qualitative detail regarding all the change management challenge and facilitator themes is provided in Appendix A10, Appendix A11, and Appendix A12.

7.1. General Change Management Challenges Reported by Demonstration Sites

Nearly all respondents described challenges related to general change management. Many respondents also described contextual facilitators or strategies used by sites to work through the change management challenges. Exhibit 7.2 summarizes the change management challenges and facilitators identified by the demonstration site leaders. These are listed in three groups according to the prevalence of reports provided by sites (i.e., issues reported by more than half of sites, by one third to one half, and by less than one third). Within these groups, individual challenges and facilitators are ordered by the relative importance that site respondents ascribed to each (e.g., the first three challenges listed were explicitly described as “major” challenges by at least five demonstration FQHCs). Additional detail about these analyses is provided in Appendix A10.

Exhibit 7.2. Change Management Challenges and Facilitators Reported, by Proportion of Demonstration Sites

Proportion of Sites Reporting	Challenges	Facilitators
More than one half		
	Patient characteristics in FQHCs	Leadership support
	Provider and staff reluctance to change	Provider and staff buy-in; champions
	Need to educate providers and staff on changes	Educating/communicating with providers and staff about changes
	Competing priorities and QI requirements	
	Integrating/routinizing new PCMH changes	
	Cultural changes for PCMH	
	EHR implementation and functionality	
One third to one half		
	Provider and staff turnover	EHR system functionality
	Change team composition and scope	Simplify new changes; lower change burden on staff
	Extent of change necessary for PCMH	
	Lack of QI/change capacity	
Less than one third		
	Leadership support and turnover	Strategies for cultural change and PCMH adaptation
	Limited timeline for PCMH implementation	Care practices already consistent with PCMH, including prior recognition experience
		Monitoring and auditing implementation of changes
		Align PCMH with other QI programs/requirements
		Physical facility design
		Provider and staff stability

Many of the prominent change management challenges shown in Exhibit 7.2 were reported by demonstration site respondents during both baseline and follow-up interviews. However, the prominence of themes varied over time. During the baseline interviews, demonstration FQHCs emphasized three challenges: provider and staff reluctance to change, integration and routinization of new PCMH-related tasks, and issues related to EHRs. As sites accumulated additional experience with PCMH implementation, new challenges emerged, including challenges associated with addressing patient needs in FQHCs and educating providers and staff on PCMH changes.

Exhibit 7.3 lists the top general management challenges reported by demonstration sites and illustrates them with selected comments from our site interviews. These issues are discussed in more detail below.

Exhibit 7.3. General Challenges Reported by Demonstration Sites

Challenges Reported by More than Half of the Demonstration Sites	Illustrative Quotations from Respondents
Patient characteristics in FQHCs	"There are a lot of barriers to care to get people to follow-up across multiple visits. FQHC patients often have transportation challenges, working multiple jobs. This leads to time-of-day challenges with individuals having to work and take care of family members—elders and children, sometimes at the same time."
Provider and staff reluctance to change	"It's not so much resistance—I think it's just change itself. We have some staff that have been here 15, 20 years. It's a big ordeal to them. And I don't think that with the PCMH model, that it's making work harder. It actually is not, but the mindset is, 'oh, it's change, so it's different and it's going to be harder'—just because it's change."
	"We initially took this on as an administrative project, [planning to] update our policies and procedures, change our schedules, study things a little more in depth than we have. About a year into the project, we discovered it was really not just an administrative department project. This required the clinical team, a complete change of perspective in how they approached their day and their patient care."
Educating providers and staff on changes	"I also think a challenge is . . . finding that way to really educate the staff, so they have a clear understanding of the process. It's finding the time to make sure that everybody understands, 'OK, this is what a patient-centered medical home is, this is why we're doing it, and this is why you need to continue to do X, Y, and Z' . . . . So, they get that education in pieces. And a big project [that] calls for change, you really need to constantly be there, reminding and educating and monitoring, and that's very difficult."
Competing priorities and QI requirements	"Not that [PCMH practice changes] aren't good, but it's adding additional things for [providers and staff] to do, on top of the fact that we are an FQHC who has to meet the Title X [family planning grant] and UDS standards of how they want us to document things, and then Meaningful Use—so for those things that were outside of all the other initiatives that we already have going on, they just really had a hard time with adding one additional thing or two additional things or additional places for them to 'click here.'"
	"I would like to organize PCMH champions at each site going forward, because I got thrown into leading the effort, and it's like I didn't have time to sit back and go, 'OK, let's see, the best way to do this' . . . I had to just go, because I knew the demonstration was running out and it was like, 'OK, we've got to go, go, go.'"
Integrating/routinizing new PCMH changes	"The challenge is how do you really integrate the providers' assessment of the patient and their input into the process without making it [so] that the team has got to be there at 8:00 in the morning, . . . So it's kind of trying to figure out creative ways that [team huddles] are working—and this is how we make it work without making it feel like it's additional work. I mean, you can only really accomplish that if you make it integrated into the work such that it just is getting done, versus that it's an extra activity that we're trying to accomplish."

Challenges Reported by More than Half of the Demonstration Sites	Illustrative Quotations from Respondents
Cultural changes for PCMH	"One [of the biggest challenges] is culture change and the other is standardization. . . . Each clinic had its own culture, so to come in and say, 'This is the way we're doing it across the board,' was met with a lot of resistance. . . . And then the culture change. As I said, some of them had such in-depth 'culturizations' that had gone on for sometimes 20 years. And to say, 'Yes, [we've] been in existence for 40 years and this is the way we've always done it, but we're changing and we're changing across the board" [was] very, very difficult.'"
EHR implementation and functionality	"I don't know for sure how you would do PCMH without an EHR. To have the documentation where you need it so that you can find out what people are doing—without the electronic health record, I don't know for sure how you could actually do a patient-centered medical home."

Patient Characteristics in FQHCs

The mission of FQHCs is to serve low-income, disadvantaged populations, who may especially benefit from a PCMH. However, implementing the PCMH model among this population could be challenging for many reasons:

- FQHC patients often have high levels of unmet medical and other needs, which can increase the amount of care coordination and self-management support required from providers and staff.
- Limited health literacy can make it difficult for some patients to recognize value in seeing a primary care or specialist provider in the absence of a severe or urgent problem.
- Some patients may also have developed habits of care that conflict with the PCMH model, such as using emergency rooms for primary care needs.
- Patients may have difficult personal and family circumstances, including migratory or more transient residency, inflexible/unpredictable work schedules, and limited transportation options—all of which can make showing up for planned appointments and continuity of care difficult.
- Patients may also lack financial resources and computer access, which can inhibit access to specialty care, make self-management difficult, and limit use of patient portals.

One site respondent noted that some patients do not see specialists even when referred. If a patient is not in pain, a medical problem may not seem urgent, especially if the patient could not take time off from work without jeopardizing his or her job. In addition, getting to the specialist might have been very difficult because patients lacked transportation.

Provider and Staff Reluctance to Change

Staff and leadership support for becoming a medical home is key to achieving cultural readiness to change and helping patients with the process. However, providers and staff can themselves be reluctant to change long-held approaches to providing care. At both baseline and

follow-up, respondents described difficulties in getting providers and other staff on board with the idea of (and changes required for) the PCMH Initiative. Challenges in obtaining provider and staff buy-in to the PCMH effort appeared to be the result of "change fatigue" and the general recognition that "change is hard," rather than outright resistance to the PCMH concept. Change fatigue was particularly apparent among the busy, stressed, overstretched providers and staff found in many FQHCs.

As new approaches to care (e.g., population management) and care practices were integrated into existing practices, many site respondents perceived resistance about the extent of the changes and new demands, given other reporting requirements.

Need to Educate Providers and Staff on Changes

Sites reported difficulty in securing enough provider and staff time and attention to conduct training on PCMHs, including new procedures and workflows, as well as educating them on the implications and importance of the PCMH model, which they felt was crucial to sustaining practice changes.

Competing Priorities

Almost all demonstration sites reported having to manage a range of other quality and safety programs, requirements, and improvement initiatives that competed for attention and resources with the PCMH effort. Thus, sites often struggled to give the PCMH effort the priority it required for implementation at the level of the FQHC, the change team, and frontline care.

Many of these competing priorities were common to other primary care settings (e.g., EHR implementation and meaningful use requirements; implementation of the International Classification of Diseases, Tenth Revision [ICD–10], private payer quality; safety initiatives). Others were specific to the FQHC context, such as HRSA requirements and initiatives (e.g., UDS measurement reporting and performance standards, specific disease prevention programs, site visit inspections) or community outreach (e.g., temporarily reassigning patient educators to enrollment for ACA Medicaid expansion). Managing these other initiatives was challenging.

At a number of sites, the realization of the amount of time required to implement required changes for NCQA Level 3 PCMH recognition came late in the demonstration period, forcing a relatively rushed pace to implement a sufficient number of changes to submit the recognition application. In the words of one site leader, there was not enough time to organize PCMH champions at the site because time was running out, and they had to "go, go, go."

Turnover in senior leadership tended to focus attention away from PCMH and other change efforts during the leadership transition period. After the transition, support for PCMH appeared to increase or decrease depending on the orientation of the new senior leadership and their appreciation for the effort required for PCMH transformation. Multiple respondents emphasized how important it was to have senior leadership "on board."

Integration of PCMH Changes

Many demonstration sites also described the challenge of integrating new practices smoothly into existing care. This challenge was intensified by the changes required for the PCMH model, and was considered to affect the sustainability of changes and the ability to prevent "slippage" into old habits after new practices were initially implemented.

Cultural Change

Respondents named cultural change and standardization as major challenges. Preexisting site cultures potentially conflicted with the PCMH model, requiring "changing mindsets" of providers, staff, and sometimes whole clinics. Some demonstration clinics supported learning and improvement cultures and were generally open to change; however, other demonstration clinics had a culture that was less directly supportive of the PCMH model. Clinics open to change were generally appreciative of team-based care, preventive care, and responsibility for the whole health of patients. In clinics without such orientation, additional education and communication about PCMH changes within clinics, along with vocal support by site champions and senior leadership, were often required to motivate cultural change.

FQHCs with multiple sites also noted diversity among clinics, each with its own individual working culture. This highlights the tension between the need to standardize practices and the value in allowing sites to adapt changes to their own local needs and customs.

EHR Implementation

Respondents in both baseline and follow-up interviews emphasized the importance of having a fully functioning EHR system in place for a smooth roll-out of PCMH practices. A number of demonstration sites, especially those that implemented EHR systems at the beginning of or during the demonstration, described the need to implement EHR as a major competing priority that detracted attention from the PCMH effort. Many sites described EHR functionality as an important facilitator of PCMH implementation, both for general monitoring of QI and practice adherence, specific PCMH components that rely heavily on EHR integration and automation (e.g., care management, self-management support, population management, previsit planning, care plans), as well as documentation of practices for the recognition process.

Nonetheless, many sites, even those with established EHR and IT support systems, struggled with changing their EHR systems in ways needed to implement PCMH practices, such as implementing templates, reporting modules, and reminders. An EHR-related theme that was more prominent in follow-up than baseline interviews was the challenge of integrating or customizing the EHR system to be compatible with the workflows and reporting requirements of PCMH.

Even sites with good internal IT support found it challenging to have EHR software vendors make necessary changes to systems for PCMH implementation. As a result, it was often difficult to gain enough EHR functionality to easily and systematically document care. Ensuring adequate care documentation often required substantial change to technical infrastructure and to the ways clinical staff entered data and used the systems. Many sites also mentioned the costs of buying supplemental EHR modules or licenses, or funding additional IT staff or consulting time as additional challenges.

7.2. General Change Management Facilitators Reported by Demonstration Sites

As part of the discussion of challenges already mentioned, respondents highlighted facilitators and strategies to address these and other challenges. The three most frequently mentioned facilitators of change are shown in Exhibit 7.4, along with illustrative comments from respondents.

Exhibit 7.4. Most Commonly Mentioned Change Facilitators Reported by Demonstration Sites

Change Facilitator	Illustrative Comments from Respondents
Support from FQHC executive leaders	"From an organizational standpoint, I think having the support of, you know, senior leadership is integral because at some point you need to devote money and staff time into making these things happen. And if we didn't have that support, then it would not be successful."
Provider and staff buy-in, including champions of change	"There has to be a clinical leader. There has to be somebody in the organization that coordinates and pushes the process through. In each one of our sites, I can identify one person who took the lead. They may have had teams and they worked in groups, but there is somebody other than the CEO leading the work."
Educating and training providers and staff	"We added medical assistant [MA] staff and assigned them a lot more training. I feel like they do a lot. They do all their MA tasks and then most of them know how to follow up on labs, they all draw blood and submit the draw . . . so they know the process. They all are able to schedule, they're able to take notes for the provider on a call or when we have to hand it off to a midlevel to triage or when it has to go right to the provider."

Support from FQHC Executive Leaders

Support from executive leaders was widely perceived by site PCMH leads as one of the main facilitators of PCMH implementation. Senior leaders' understanding of the PCMH model and the extent of change effort required for PCMH transformation and NCQA recognition were viewed as important preconditions for the FQHC to provide sufficient prominence, expertise, dedicated time, and other resources for the PCMH effort. A distinguishing feature of effective leadership

support was willingness to allocate appropriate staff and financial resources to the PCMH transformation effort.

Provider and Staff Buy-In, Including Champions of Change

PCA respondents focused mainly on the role of champions as facilitating PCMH implementation. One respondent suggested that younger providers were more likely to adapt to new changes and processes.

Key strategies described by interviewees to improve buy-in included:

- educating and communicating with providers and staff on PCMH principles and objectives
- emphasizing that the FQHC may have already implemented many PCMH components (even if not as fully or consistently as required)
- reminding staff that the goal of the PCMH is to improve patient care, that PCMH changes in care roles and teamwork may make providing care easier and more satisfying, and the changes might even improve the "joy of practice" (Sinsky et al., 2013).

Some sites also attempted to improve ownership and buy-in by engaging providers and staff directly in change efforts, to the extent possible, and making PCMH transformation a "whole-clinic" effort. One respondent noted the need for a "super user"—someone who understood the model and could communicate it across the organization.

Educating and Training Providers

Sites used several approaches to educating providers and staff, including explaining how changes are consistent with current practices and what outcomes PCMH transformation is designed to attain. Some sites also described how approaching PCMH in a systematic and incremental manner facilitated the roll-out of PCMH, particularly because of the number of changes needed and because of the transformative nature of most of the changes.

Equally important was being able to educate and train providers on the plan for change and on specific practice changes they would need to implement or that could affect them. Respondents mentioned strategies for educating and training providers:

- An experienced and dedicated staff trainer (typically a senior nurse) able to provide both didactic and hands-on education on new PCMH practices can be a critical facilitator.
- Some sites utilized an incremental, systematic approach to educating and implementing changes (i.e., gradual "baby steps"), as well as linking these changes to the "why" and "how" of the PCMH model.

Sites varied with respect to whether they implemented one or more of these strategies.

Some tension was noted between immersing staff in the full PCMH model and extent of changes (to increase engagement with the change effort but possibly overwhelming staff) versus

introducing segments of change on a "need to know" basis (to simplify implementation but potentially alienating staff from the wider vision and process of transformation).

A number of sites also discussed the need to simplify new changes and find other ways to lower the burden on staff of adopting PCMH-related practices and systems of care—for example, by inserting new practices at the right points in the workflow and by using EHR templates and other system prompts. Site leaders also stressed the need to monitor adherence and provide ongoing reinforcement for new practices and procedures by using EHR systems to document care.

7.3. General Change Management Issues in Comparison Sites

Because many comparison sites were also pursuing some form of PCMH recognition, we also asked comparison site leaders about change management issues during interviews. Change management issues in demonstration sites were similar to those found in comparison sites. Facilitators included the importance of leadership support and the need to educate providers and staff.

In general, differences in change management issues between demonstration and comparison sites appeared to reflect the fact that comparison sites were generally at earlier stages of PCMH implementation, whereas demonstration sites were discussing issues at deeper levels of change. Issues at comparison sites were as follows:

- **Provider and staff reluctance to change.** Both demonstration and comparison sites experienced low levels of outright refusal or overall resistance to PCMH transformation, but both needed to confront reluctance or lack of engagement with specific practice changes or education about the new initiative. Administrative staff at comparison sites educated providers and staff about the philosophy and value of PCMH for patients, emphasizing that PCMH changes would create efficiencies designed to reduce provider burden (i.e., through a care team model).
- **Cultural changes for PCMH.** Comparison sites also mentioned the capacity for implementing change at their FQHCs. Demonstration sites discussed this capacity in terms of staff not having the right skill sets (e.g., QI and change management knowledge and experience); comparison sites tended to discuss change capacity in terms of a lack of dedicated staff time and attention for PCMH transformation.
- **Patient characteristics.** Both comparison and demonstration site respondents mentioned the socioeconomic circumstances of FQHC users as a challenge when implementing a medical home model. Comparison sites tended to focus on the challenge of contacting patients due to patient transience (e.g., disconnected phone numbers, outdated mailing addresses). Comparison site personnel did not mention the issue of habits or culture of health care utilization among FQHC patients as an obstacle to PCMH—a prominent theme among demonstration site respondents.

- **Importance of leadership support.** Like demonstration sites, comparison sites emphasized the importance of a supportive leadership infrastructure to facilitate the dissemination of PCMH concepts and values. Comparison sites cited examples of clinic leadership support: in one case consumer board members were very interested in PCMH, which catalyzed the site's engagement with practice transformation activities.
- **Educating providers and staff.** Both demonstration and comparison sites discussed the importance of educating providers and staff on PCMH transformation. Demonstration sites focused on educating providers and staff about the "why" of PCMHs; comparison sites talked about clarifying the reporting needs of PCMHs from other reporting (e.g., Healthcare Effectiveness Data and Information Set [HEDIS]) and "defining the acronym" for their staff; i.e., explaining what it means to become a PCMH.

The different emphases among comparison sites suggest that demonstration sites targeted a deeper level of meaning and understanding than comparison sites. Comparison sites were still focused on building the foundation of general or shared understanding of PCMHs, while demonstration FQHCs had moved beyond that stage.

Both sets of respondents mentioned the challenge of competing priorities and integrating or routinizing changes, but this challenge was mentioned more often and in greater detail by demonstration sites. Comparison sites tended to focus on lack of staff time and attention to the PCMH change effort, while demonstration sites gave more attention to the issue of staff not having needed QI skills.

7.4. PCMH-Related Practice Changes: Overview

The pursuit of PCMH recognition and the transformation to a PCMH require a number of changes within the structure of a medical practice. For example, changes might include hiring more staff, moving toward team-based care, extending hours and instituting same-day appointments, and developing a web-based patient portal or other forms of remote access. Previous research has examined the barriers and facilitators to implementing PCMH-related practice changes, such as team-based care (O'Malley et al., 2014), tracking care by other providers, and providing patient health education and self-management support (Arar et al., 2011).

To understand PCMH implementation and efforts at attaining recognition in the FQHC context, we used the qualitative data from our interviews of site and PCA leaders at both baseline and follow-up time points (see Appendix A2). Our interviews inquired about the specific practice changes that sites made as part of their PCMH efforts, as well as the challenges they encountered and the facilitators—including contextual conditions and strategies—they believed helped in implementing these components of the PCMH model.

We analyzed the results of the demonstration site leader interviews to identify the practice changes that sites implemented or attempted to implement (see Appendix A2 for interview methods). As might be expected, the practice changes generally tracked with the six domains of

the NCQA 2011 standards (see Exhibit 7.5). We also identified the challenges and facilitators reported for each practice, as well as the experiences of comparison sites and relevant comments by PCA leaders on site implementation of these PCMH components. Additional detail about these analyses is provided in Appendix A11.

7.5. PCMH-Related Practice Changes

All demonstration FQHCs in the qualitative interview sample reported implementing a variety of PCMH-related practice changes, which entailed substantial implementation resources, activities, challenges, and facilitators. Exhibit 7.5 presents these reported practice changes organized into 14 categories, which are then further grouped according to the six NCQA 2011 standards (e.g., care team and other staffing changes, empanelment (the process of assigning individual patients to primary care providers and care teams to improve continuity), open access, linguistic/cultural access, patient web portal, and access to specialty care under Standard 1—Enhance Access and Continuity). We illustrate each category of practice change using selected comments from site respondents. The number of practice change categories implemented ranged from five to 14 per site, with little apparent difference among those sites that achieved NCQA Level 3 PCMH recognition, those that achieved NCQA Level 2 PCMH recognition, or those that were excluded or withdrew from the demonstration.

Exhibit 7.5. Specific PCMH Practice Changes Emphasized in Demonstration Site Interviews, Grouped by Relevant NCQA 2011 Standard

NCQA 2011 Standards	Specific Practice Changes Emphasized in Site Interviews	Illustrative Comments from Respondents
1. Enhance access and continuity	• Care team and other staffing changes, including teamwork procedures (e.g., huddles) and integration of other types of staff (e.g., care managers, patient educators, behavioral health) in "expanded" care teams • Empanelment • Open access (e.g., extended hours, same-day appointments) • Linguistic/cultural access • Patient web portal and other remote access • Ensuring access to specialty care[a]	"It really was just giving people new roles. And we did expand a few roles. We've always had an intake nurse, but with the PCMH, that intake nurse then became the care team LPN, and that care team LPN, instead of triaging, now deals with those patients who are assigned to her doctor." "We've instituted same-day appointments. That was challenging…and I think there was a certain amount of resistance: 'What does it mean, same-day appointment?'" "I would say computer literacy is a huge issue . . . and with our portal, having somebody that patients can call when they can't access the portal or when they need assistance . . . is really important, and that's just something we haven't had." "This is the only medical university in the state, the only place for indigent care . . . So you're not just competing with everybody in this metro area, there are people coming from all over the state for specialty care." "We definitely had to make changes to where we had assigned care teams. We've always had a doctor who worked with the same nurses, but a care team concept where the patients see the same doctor, see the same nurses on each of the visits that was something new. And for the care teams, knowing that they are a team . . . and everyone working as a team."
2. Identify and manage patient populations	• Population management (e.g., collecting demographic and clinical data, creating registries for patients with specific conditions, identifying patient risk factors)	"Currently we have a couple of people that are doing care management and we are getting some decent reports on the high-risk patients that we have now, which does make a difference to be able to target the highest risk." "An additional change that we made, and really also driven by the medical home model, is that we invested in a population management system that integrates with our electronic health record. And we did that because there was a realization that even though you pull a lot of data out of the electronic health record, it's not always actionable the way that it comes out. And so, with this population management system we put in place, we're now able to really focus in on clinical conditions, or focus in on certain populations and segregate out populations, and so that's been very exciting for the organization." "I think one of the biggest challenges with the information technology is actually having patient registries now. Our previous management system was very ancient and not capable of this."

NCQA 2011 Standards	Specific Practice Changes Emphasized in Site Interviews	Illustrative Comments from Respondents
3. Plan and manage care	• Previsit planning • Care plan development, including involving patients and caregivers	"They were doing a lot of it already, but I think that just formalizing it—I think that's something that we're looking at, like choosing which guideline we're going to use and making sure that we're consistent and structuring that with what we have to do. That's a little bit different than what we had before." "The templates that are required for the Next Gen or any EHR—they have to be developed especially for [PCMH]—and that adds cost. It adds time. Next Gen has now told us to stop modifying templates because they're having a hard time keeping up and there's going to be changes they're going to be implementing in their next version that will take care of some of that. So that involves a lot more of my IT staff, my operations people, and it puts a bigger administrative load on working that model through."
4. Provide self-care support and community resources	• Self-management support • Community resources linking for self-care, social or other nonmedical needs	"The self-management is probably one of the bigger challenges at that site in particular. Getting those patients engaged in their self-care plan is tough. We're talking a large migrant population. We're talking about people that might not have—they may [have limited literacy]. . . . So we're doing it, but that's a challenge and that takes a lot of time."
5. Track and coordinate care	• Tracking, following up on and coordinating referrals and care with: o hospitals, including following up with patients after discharge o specialists o laboratory, imaging, and other diagnostic tests	"From [one community hospital], oftentimes we do get information on admissions. I mean, I won't say any system is a hundred percent. But I know I get a lot, 'Oh, your patient was admitted for this reason,' and we get a summary page when they're discharged. [Another hospital] sometimes, though we have a lot more personal phone-to-phone communication with them. [The regional hospital], not as good. Yeah, and that's what we're trying to fix. But it's frustrating."
6. Measure and improve performance	• Monitoring and using performance, outcome, and patient experience data for continuous improvement • Consistent documenting of care[a]	"The biggest challenge was probably explaining to the providers why they needed to do some of the new things. EHR has been really hard for physicians and providers, midlevel providers. Sometimes they feel we're asking them to just do more than what's humanly possible or do things that maybe support staff could be doing. That's when you have to try to explain, 'well, this is why we need you to do it,' or 'it's better for you to do this because you understand it better,' or 'you're liable to make less errors,' or whatever it is." "There are so many documentation requirements that are being put on providers now. And with the fact that, being an FQHC, we don't have all that staffing, ancillary staff, to really assist the providers in doing all the documentation. So I think that may be a problem going down the line."

SOURCE: NCQA, 2012 and RAND site leader interviews.

[a] PCMH practice not included as a stated element of the NCQA standard, but emphasized by site respondents.

Enhance Access and Continuity

Sites made many changes to implement team-based care, but often struggled to adapt to new models. Changes included reconfiguring the roles of existing staff, hiring new staff, training MAs and other staff to practice at the top of their license, integrating specialties, and transforming support and administrative staff into "expanded" teams. At some sites, clinicians were initially reluctant to delegate tasks to other members of the teams; however, over time, they began to see the benefits of letting other team members take on more tasks and, in one respondent's words, "people become Swiss Army knives and they take on additional duties." Another respondent noted that it was a major challenge to identify and establish efficient workflows, given new arrangements.

There were also cultural or personality barriers to new arrangements, especially involving providers not accustomed to delegating tasks. The costs of adding new staff and increasing staff time for PCMH-related tasks were noted, as was integrating specialty providers (e.g., behavioral health) into the care team.

Facilitators of care team implementation included having a shared physical space conducive to team collaboration, using an EHR that could efficiently share information across the care team, setting clear roles, and carefully attending to interpersonal chemistry among care team members. One respondent described the latter process in this way: "You have to match up people who get it, who get along well with each other, who speak the same 'language,' who basically kind of 'marry' each other, for lack of a better term."

Many sites implemented open-access changes, but providers and patients often had difficulty adjusting to new systems. Challenges related to same-day appointments included building same-day appointments into provider schedules, acclimating providers and patients to the new practice, and figuring out how to make other PCMH tasks work with same-day appointments. Respondents speculated and sometimes presented evidence that offering same-day appointments would increase no-show rates and create difficulties in previsit planning. Some providers and patients had difficulty adjusting from "walk-in" systems (in which patients just show up and wait until a provider is available) to same-day appointment scheduling. Another concern about same-day appointments was the amount of effort needed to create and establish a consistent flow of information to the team about the patients being seen on a given day.

Many sites also struggled with or delayed implementing a patient web portal due to both technical and patient-related challenges (e.g., computer literacy, linguistic diversity). To help overcome these challenges, sites sought to increase provider buy-in and to promote the patient portal by encouraging patients to enroll and use the tool.

Before the demonstration, many sites had already empaneled patients to individual providers or provider teams, but the demonstration compelled sites to empanel patients more consistently or comprehensively. One respondent said the demonstration had led the site to put some

"oomph" into the process of making sure that patients are actually seeing the providers they are registered to see. Challenges to empanelment included provider turnover, patients' lack of familiarity with the notion of empanelment, and difficulty in synchronizing empanelment assignments across insurers' and the FQHCs' records. Respondents at some sites felt that insurers' expectations for the panel, especially concerning its size, were unrealistic, given the needs of the FQHC patient population (i.e., insurers sometimes wanted sites to empanel a higher number of patients than the site considered feasible).

Increasing access to specialty care was a major challenge for most sites. Site respondents described many reasons for this challenge, including patients' lack of resources (insurance, transportation) and the limited number of specialists available and/or willing to see FQHC patients. The limited number of specialists in some areas created competition for their time. At rural sites and sites in smaller cities, specialists were located a significant distance away. One site emphasized the access challenge by estimating, "it could be a four-hour trip for a patient to get there." Strategies identified for improving specialist access included developing relationships with specialty providers and networks, arranging for external specialists to hold clinics at FQHCs, negotiating with specialty care services, and, less frequently, hiring specialists within the FQHC.

Identify and Manage Patient Populations

Sites implemented several changes to improve population management, but many faced technical and documentation challenges. Changes included implementing systems and procedures for tracking patients with chronic conditions consistently, monitoring data at the population and subpopulation levels, and linking data to actions for preventive care and related services.

Site respondents reported difficulty in "pulling" necessary data from the EHR or specialized registry systems into usable formats; addressing this challenge often required changes to technical systems. A related challenge was ensuring consistent documentation of care by providers, which affected the usability of patient data for population management purposes. This involved figuring out if the EHR could provide the needed data, customizing it if necessary, and training and monitoring providers to ensure that they were recording patient and practice information correctly and for every encounter. Several demonstration respondents mentioned investing in additional EHR functionality as a key facilitator in this area.

Plan and Manage Care

Care teams implemented previsit planning in different ways and often found the most effective arrangements through trial and error. There was variation across sites concerning who would conduct which task and when each task would be conducted. Care teams required latitude in determining how to implement previsit planning procedures, such as identifying missing

laboratory or specialty results ahead of time or conducting team "huddles." The form of these huddles also varied, from a more typical daily morning meeting with the care team to discuss scheduled patients, to other models (such as "real-time" chart abstraction done by an MA immediately before the visit), to "focused" previsit planning (during which providers emphasized referral tracking or population management for a month or several months).

Dedicating sufficient team and individual staff time (and sometimes space) for previsit planning procedures was often cited as a challenge. A major facilitator of previsit planning was the ability of EHR systems to generate needed information and help automate components of the previsit planning process.

Respondents reported several challenges with care plans related to providers, patients, and the EHR. Many providers did not consistently document or engage patients in developing care plans. Some patients did not want to engage in developing a plan, perhaps due to cultural orientation or lack of self-efficacy about their health. Other challenges included the limited ability of EHRs to document, revisit, or track changes in the care plan over time. Creating the automated templates was also costly and required IT efforts to figure out the best method to operationalize the needed reports.

Provide Self-Care Support and Community Resources

Sites improved self-management support through patient education, goal-tracking, and follow-up documented in the EHR. Site respondents said that integrating self-management support into the clinical encounter was both a challenge and an enhancement over existing practices. Some sites hired additional patient educator staff to support this role.

Respondents reported difficulties in documenting and tracking self-management goals and progress using the EHR. Further, as with care plans, some patients were not ready or interested in being engaged around self-management issues. Site respondents also noted that self-management was not always relevant if a patient visit centered on a more acute issue.

Many respondents reported that once there was sufficiently developed EHR functionality for self-management, EHR systems could greatly facilitate patient self-care by providing a way to document and track self-management goals.

Track and Coordinate Care[45]

Sites implemented several changes to improve tracking and coordination of care across sites, but faced challenges in information flow and time management. Changes to improve care tracking included hiring new staff, investing in new software, improving existing EHR capabilities, and cultivating relationships with hospital discharge planners and specialists. Some sites already had integrated EHRs (especially with hospitals), but others described "human systems" that caught most, but not all, patients. Many care teams had difficulty managing the time required to chase down records and follow up on referrals; a dedicated referral clerk or specialist was a common solution, if FQHC resources allowed. Procedures for tracking hospitalizations and discharges were often staff intensive.

Measure and Improve Performance

Demonstration site respondents described instituting and improving upon existing reporting tools to publish performance data. Respondents also described convening meetings or teams around QI efforts. For example, one site implemented "QI coordinators" at every clinic to work with teams.

Sites also used reporting on practice adherence to maintain compliance with new PCMH practices and to identify providers or sites with failing performance that required intervention. Common challenges to developing QI infrastructure included:

- lack of resources, staffing, and expertise to manage quality data systems or improvement processes
- lack of buy-in from providers and staff
- difficulty in aligning PCMH implementation with other quality initiatives.

Strategies cited for addressing the QI challenge included capitalizing on the dynamic of "friendly competition" within sites, providing feedback reports to providers, and using EHR to demonstrate clinical outcomes. For example, as discussed in Section 4.2, many sites were initially not aware of the potential value of feedback reports in facilitating their NCQA application or their PCMH transformation. Subsequently, information about how to access and use these reports was more widely disseminated.

[45] To be consistent with NCQA standards, additional details related to care coordination are highlighted in other report sections but not explicitly called out as a category in and of itself in this text. For example, care coordination roles are included under NCQA 2011 Standard 1 (Enhance Access and Continuity) as part of team-based care (specifically Standard 1G—The Practice Team). This standard (5-Track and Coordinate Care) focuses on coordinating care with other providers external to the clinic. This report further discusses care coordinators when discussing site strategies for integration of expanded team roles (see Section "Enhance Access and Continuity" above).

Sites faced challenges in documenting care consistently, as was needed to support both performance measurement and the NCQA Level 3 PCMH application. Sites needed to achieve consensus with staff on standard care documentation procedures and to train and monitor staff to ensure that documentation was consistent.

Changes to EHR systems that reduced the burden of documentation were considered helpful, as were distributing responsibility for documentation across the care team and monitoring and feeding back levels of compliance to clinical staff.

7.6. Demonstration Versus Comparison Site Experience with Implementation of PCMH-Related Practice Changes

Many demonstration and comparison site respondents reported similar practice changes, challenges, and facilitators. Comparison site respondents occasionally reported being at early stages of development or implementation for certain components (e.g., care teams not implemented yet, just beginning, or in rudimentary formation or substantially revamping formal QI processes).

Comparison sites tended to describe practice and change issues in less detail or with less nuance than did respondents from demonstration sites. Sites also appeared to differ in the degree to which PCMH responsibilities were assigned to new versus existing staff. Comparison sites tended to give new PCMH responsibilities to existing team members rather than hiring new staff, as was more common among demonstration sites. The APCP enhanced care management fee payments may have increased the willingness of demonstration sites to add new staff.

Below we highlight a few findings from the comparisons sites, organized by the NCQA categories:

- **Enhance access and continuity.** Comparison site respondents discussed sharing responsibilities within the care team, broad inclusion of diverse staff into the care team, and tools to support the care team. Comparison sites also described initial staff resistance to same-day appointments, along with eventual acceptance and agreement that this type of scheduling model is feasible and good for patients.
- **Identify and manage patient populations.** Both comparison and demonstration sites commented on the challenge of population management, due to lack of EHR systems or lack of EHR capability.
- **Plan and manage care.** Comparison sites faced similar challenges to previsit planning as those mentioned by demonstration sites. Both types of sites mentioned how EHR limitations required workarounds, and how developing a care plan and educating patients about the plan changes both clinician workflow and the content of patient visits.
- **Provide self-care support.** No comparison site leaders mentioned practice changes around this topic. Some respondents did mention establishing a committee or department to conduct formal patient education in order to engage and empower patients in self-

managing their care; in these cases, patient educators (e.g., nurse home visitors) and care managers were hired to assist with the training.

- **Track and coordinate patient care.** Comparison site respondents did not describe in detail how they addressed hospital tracking and discharge coordination. Nor did they mention processes and workflows they had implemented. However, they underscored the importance of developing strong relationships with hospitals to gain access to hospitals' EHR systems.
- **Measure and improve performance.** In contrast to demonstration sites, comparison site respondents described fewer formal processes, such as committees or reporting tools, to measure performance. A few respondents stated that they were either just beginning formal QI efforts or were revising their existing processes. They discussed how EHR functionality was sometimes an obstacle to consistent documentation of care; they described using the EHR to facilitate consistent documentation of care, and the role of EHR training to help providers document care correctly.

7.7. Challenges and Facilitators Associated with the NCQA Level 3 PCMH Application Process

Since NCQA Level 3 PCMH is the form of recognition that was required of demonstration sites, we were interested in understanding any challenges and facilitators associated with the NCQA Level 3 PCMH recognition process in particular. We therefore analyzed the qualitative data from our interviews of site and PCA leaders (see Appendix A2 for details on the qualitative methods). Additional detail about these analyses is provided in Appendix A12.

Exhibit 7.6 summarizes the main challenges and facilitators in preparing and submitting the NCQA application, as reported by site leaders, and identifies some issues specific to FQHCs. The exhibit also provides illustrative comments from site respondents. Note that respondents did not describe facilitators for each of the challenges.

Exhibit 7.6. NCQA Application Challenges and Facilitators

Challenges	Illustrative Comments from Respondents	Facilitators or Strategies	Illustrative Comments from Respondents
• Need to create processes and EHR systems to document care practices and generate documentation for NCQA application • Difficulties with EHR vendors to make needed changes • *FQHC-specific issue*: Level of specificity required for NCQA documentation was considered overly burdensome in resource-constrained settings like FQHCs	"A lot of the changes we made were dependent on the electronic health system . . . When you were talking about our way of documenting self-management goals, that was probably one that they put out to go to Level 3 because they had to build into the system a way to capture that—that would trigger the providers to remember this patient had a self-management goal . . . And the medication management, the medication, all of those thing necessitated rebuilding the EHR to accommodate the documentation needs. . . . There was a lot of system development and special forms and special codes and stuff that we had to use to be able to capture that was built into the reports." "The emphasis on policies surrounding the EHR, I've had a lot of trouble with them, mostly it's writing of policies. I've actually had good documentation. I've been told by NCQA that we have good documentation surrounding our practices and have then been told, 'But you didn't specify that [a particular detail of a care practice that NCQA requires] in your policy so we can't accept your documentation.' Now, there's just not a lot of clear pictures on writing policies in the world of EHR."	• Having systems in place to document care practices that can also generate reports and outputs needed for the application	"It was a long demonstration and with the project and with the goal being the Level 3 attainment we had to go back and continue to retrain. We may have started off with rehiring people that vacated the position and retrain, and then certainly make sure that the processes were in place so we could document compliance."
• Need to develop new policies to support documentation for NCQA		• Having systems in place to document care practices that would also generate reports and outputs needed for the application	

Challenges	Illustrative Comments from Respondents	Facilitators or Strategies	Illustrative Comments from Respondents
• Time-consuming nature of NCQA application process • *FQHC-specific issue*: Diversity of care delivered at FQHCs (e.g., adult primary care, behavioral health, pediatrics) makes it challenging to reach consensus on sitewide policies	"When it came down to it, you really have to have an individualized report for each one of your practices, even if you were a system organization. And so a big portion of the application is really having those individualized reports for each one of your practices."	• Connecting with TA providers knowledgeable with the NCQA recognition process can help sites bring applications more in line with reviewer expectations • Other TA providers (e.g., Qualis or PCA staff with NCQA content expertise) to provide definitive guidance prior to formal NCQA review • Mock surveys and application reviews	"[We worked] closely with NCQA, to work back and forth, to make sure that we certainly presented our evidence in the best possible light to get those points that we needed for Level 3. And I think [my colleague at our FQHC] has a direct line right now to the NCQA headquarters, and that worked out well for us, both to act as a coach and a mentor, but also to make sure that we are on the straightest path possible to attain that designation."
• Subjectivity and changing interpretation of NCQA standards, submission requirements, and review process • PCMH model built on systems and dependencies that are difficult to express with stand-alone documents; • Many sites did not have the initial skills or awareness of the need to "tell a story" in this type of application	"We get a lot of questions about what are the best ways to implement some of these standards and elements, because for some community health clinics it's very difficult considering the population they serve. One piece is around care coordination. Care coordination still is a very complex area because folks just aren't sure how to create their care teams, and it requires resources to either train existing staff, retrain existing staff and/or create new positions and figure out how the finances will support those new positions. The other piece is around patient self-care, patient engagement. If they're all walk-in clinics, if they serve primarily the homeless population, the idea of having real patient engagement or having patients serve as volunteer board members is very difficult to achieve."	• Backward mapping from NCQA and demonstration deadlines and requirements in order to set internal timelines and motivate changes	"To set a timeline is also important because, I think, for each element in the standards, we may need to make some changes and we may need to form some subgroups to work on it. So, planning ahead and setting a timeline is very important."

Challenges

EHR functionality. Many of the challenges associated with the NCQA Level 3 PCMH application process focused on the program's documentation requirements and the need to add functions to the EHR system**.** Some sites had to invest substantial time in getting the EHR system set up to capture and report on care practices related to PCMH transformation. For example, it might be necessary to train staff to enter information into the EHR in a way that was suitable for extraction (e.g., not in "free text" fields) or to work with IT services or EHR vendors to customize the EHR system so that it could generate the necessary reports.

Many sites had relevant experience with this process because of other quality reporting (e.g., HEDIS, Title X family planning grants), but because the NCQA Level 3 application asked for elements that sites were not already reporting, they often had to revise the clinical care templates to customize how data were entered and to build new reports. In some cases, the functionality required for NCQA reporting was also more complex than what sites were already using. For example, several site respondents identified the ability to track self-management goals and progress from visit to visit as a particular challenge due to the required functionality of the EHR system. Consequently, some sites found it difficult to report on self-management processes for the NCQA application.

New policies to support documentation. Sites sometimes needed to create new policies to support documentation for their NCQA Level 3 PCMH application. As part of PCMH transformation, sites often needed to formalize their processes around PCMH practices, both so they could provide documentation to NCQA and to ensure that care practices were being conducted consistently. When they did not have current or comprehensive policies in place, they needed to develop such policies, which could be time consuming.

Time-consuming application process. While demonstration sites also reported feeling time pressure due to the commitment to achieve NCQA Level 3 PCMH recognition within the three-year demonstration timeframe, respondents also described more generally the amount of time and level of effort required to gather and upload documentation and complete the application process. They felt they had to be deliberate and strategic about the "story" their documents told in order to show clearly that their site was meeting the standard. This challenge was made more difficult for sites where clinic staff lacked strong communication skills.

Many respondents expressed their perceived frustration concerning the subjectivity and changing interpretation of NCQA standards, submission requirements, and review processes. Respondents from multisite FQHCs also reported confusion and challenges around applying for recognition for multiple sites.

FQHC-specific challenges. Sites reported two FQHC-specific challenges. First, respondents generally felt that the level of specificity required for NCQA documentation was overly burdensome in resource-constrained settings like FQHCs. Second, respondents felt that the diversity of care delivered by many FQHCs (e.g., adult primary care, behavioral health, and

pediatrics, often for patients with diverse languages, cultures, and degrees of health literacy) made it difficult to reach consensus on site-wide policies required for documentation. TA providers (often from outside NCQA) and other peer organizations familiar with the NCQA recognition process were viewed as helpful in this regard. Likewise, site leaders identified certain NCQA standards or elements they considered difficult and perhaps ill-suited to the FQHC context, including the financial constraints and patient populations of many community health centers.

Facilitators

Sites also reported facilitators of the NCQA application process. Some are noted below.

Drawing on existing systems. Site leaders believed that a successful application experience was rooted in having a system to document care and being able to extract what was needed from that system. They saw having a foundation of consistent documentation of care among their staff as part of the larger process of attaining NCQA Level 3 PCMH recognition. In addition, the foundation of a well-functioning EHR system was conducive to generating the reports needed for the NCQA application.

Using TA support. Connecting with NCQA and other TA was also considered important in generating a high-quality application. Sites discussed the importance of making connections and building relationships with staff at NCQA, as well as other demonstration-related TA support.

Backward mapping. A third factor that site leaders described as facilitating their NCQA application was a process of backward mapping from the NCQA standards and demonstration deadlines to the practice changes and documentation that they needed to execute. Because the application deadlines and NCQA criteria were tangible representations of PCMH transformation, sites found that having a structure helped them focus their attention and efforts on PCMH-related changes.

7.8. Chapter Summary and Conclusion

This chapter described the changes made in care practices and the challenges and facilitators associated with PCMH transformation; the challenges and facilitators associated with the NCQA application process itself; and provider and staff experience of change.

Key points regarding practice changes and challenges and facilitators of PCMH transformation include the following:

- Demonstration sites implemented a variety of practice changes, including team-based care, more-consistent and more-comprehensive empanelment of patients, use of same-day appointments, improved tracking and monitoring of patient data, and expanded quality measurement systems.
- EHR systems and team-based care were identified as foundational components of other PCMH-related changes.

- Several practice change implementation issues were related to aspects of the FQHC context, including FQHCs' resource constraints, levels of provider and staff turnover, the FQHC mission, and patient characteristics.
- Sites sometimes struggled to adapt to new models of care and faced challenges related to establishing workflows, implementing same-day appointments, implementing a patient portal, and increasing access to specialty care. Respondents also reported challenges related to care plans and difficulty in "pulling" necessary data from the EHR into usable formats.
- Sites improved patient self-management support through education, goal-tracking, and follow-up documented in the EHR. Sites also implemented changes to improve tracking and coordination of care and to expand quality measurement systems and QI practices.
- Many demonstration and comparison site respondents reported similar practice changes, challenges, and facilitators.
- There were also challenges and facilitators associated with the NCQA application process itself.
    - The application process was time consuming, which some respondents felt had distracted from implementing practice changes.
    - The diversity of care delivered by many FQHCs made it difficult to reach consensus on site-wide policies needed for the application.
    - Sites often created processes and adapted EHR systems to generate documentation of care practices for the NCQA application.

8. Provider and Staff Experience of Change

In this chapter, we further explore the experience of the demonstration, barriers to and facilitators of change, and site climate by examining the perspectives of site clinicians and staff. To understand the effects of practice changes during the demonstration, we conducted a Clinician and Staff Experience (CASE) survey among clinicians and staff in demonstration sites. Survey findings suggest that, in addition to the challenges described in Chapter Seven, participating sites experienced significant stress during the demonstration period, which manifested in worsening survey results on multiple dimensions of practice culture and professional satisfaction.

We fielded this survey in an early/baseline wave (April 22 to August 30, 2013) and a late/follow-up wave 14 months later (June 8 to October 22, 2014). The survey measured changes in four areas: uptake of demonstration technical assistance, clinic culture and teamwork, work experience, and challenges to practice change. Additional information on the CASE survey is available in Appendix A13.

8.1. Overview of Results

We analyzed longitudinal changes in CASE survey responses, overall (including all demonstration sites) and stratified according to baseline site medical homeness score (i.e., high or low RAS score at the start of the demonstration).[46] Our findings, by survey topic, were as follows.

- **Uptake of demonstration TA:** Between the early and late CASE surveys, clinicians became significantly more likely to report being aware that their sites were participating in a project to become a medical home and to report having seen a feedback report on medical home transformation. However, clinicians in sites with high baseline RAS scores were less likely to have found this information useful.
- **Clinic culture and teamwork:** Between the early and late CASE surveys, clinicians and staff reported significant worsening in multiple areas of clinic culture and teamwork. For most measures, the degree of worsening was significantly greater among sites with high baseline RAS scores than among sites with lower baseline RAS scores.
- **Work experience:** Between the early and late CASE surveys, clinicians and staff reported significant reductions in overall professional satisfaction and corresponding

[46] As a sensitivity analysis, we stratified by end-demonstration NCQA medical home recognition level, rather than by baseline RAS score. In all cases, the results of these sensitivity analyses were substantively similar to the main analyses presented here.

increases in stress, burnout, feelings of "chaos," and likelihood of leaving their practices. These changes were similar in sites with high and low baseline RAS scores.

- **Challenges to practice change:** Fewer than one-third of responding clinicians reported easy access to subspecialists outside the practice, including mental health providers. The majority of responding clinicians reported that their practices were making efforts to increase access to mental health services, but there were no statistically significant changes in reported ease of access to mental health or other specialists between the early and late CASE surveys.

All of these results should be considered with an important caveat: Because the CASE survey was not fielded among comparison sites, observed changes over time are not necessarily attributable to the demonstration itself. Contemporaneous changes affecting other FQHCs and primary care practices more broadly, such as the adoption of EHRs under HITECH, also could explain the changes we observed.

However, taken together, these findings from the CASE survey suggest that during the period of the demonstration, participating practices experienced significant stress that manifested in worsening survey results on multiple dimensions of practice culture and professional satisfaction. These findings are consistent with results of site leader interviews reported in Chapters Seven and Fifteen, which indicated that adopting PCMH capabilities and care models was stressful to practices (e.g., that practices experienced "growing pains" when adopting new workflows), put pressure on providers' time (e.g., additional time required for team huddles, previsit planning, and documenting care), and increased the likelihood of burnout for some providers. This stress exacerbated concerns by some providers and staff about not having enough time to spend with FQHC patients, many of whom had complex medical and social needs. Similarly, a number of site leaders described how the intensity of the PCMH transformation and recognition processes during the initiative had created a strenuous transition climate within practices, especially as the end of the demonstration's three-year requirement to attain recognition approached.

The CASE findings concerning barriers to accessing specialty and subspecialty care also are consistent with reports from the qualitative interviews, which repeatedly found sites struggling to identify available specialists willing to treat FQHC patients and to help these patients overcome myriad obstacles to following through on specialty referrals, ranging from family obligations to transportation to difficulty taking time off work.

Additional results from the CASE survey and detailed CASE survey methodology are presented in Appendix A13.

The findings regarding changes to clinic culture and clinician and staff experience are especially important. We discuss these in more detail below.

8.2. Changes in Clinic Culture

Between the baseline and follow-up fieldings of the CASE survey, clinicians and staff in demonstration sites reported worsening performance in multiple areas of clinic culture. We found statistically significant declines (i.e., worsening scores) on adaptive reserve (an organization's capacity for change and includes infrastructure strategies to facilitate relationship building, facilitative leadership to support collaborations, sensemaking to help individuals give meaning to their experiences, teamwork, a culture of learning, and work environment) (Jaen, Crabtree, et al., 2010); communication openness and organizational learning (AHRQ, undated-b); and team structure, situation monitoring, and mutual support (AHRQ, undated-c). However, as already noted, because the CASE survey was fielded only among demonstration participants, it is not possible to tell whether these declines reflect effects of demonstration participation or more-general trends occurring among many FQHCs over the same time period.

We also investigated whether the degree of change in these measures of clinic culture differed between sites with higher baseline RAS scores (equivalent to NCQA PCMH Levels 2 or 3) and lower baseline scores (equivalent to Level 1 or lower). For nearly all clinic culture scales, respondents in sites with higher baseline RAS scores reported greater worsening in clinic culture (i.e., as reflected in greater declines in culture scale scores) than those in sites with lower baseline RAS scores.

The only exception to this pattern was the values alignment with leaders scale (Linzer et al., 2009). Though there was an observed decline in score, this decline did not achieve statistical significance.

All measures of clinic culture tended to align together, moving relatively but not completely in unison, rather than independently. Representative results are presented in Exhibit 8.1; the complete set of these analyses are in Appendix A13.

Exhibit 8.1. Scale Results from the CASE Survey

	Number of Survey Respondents	Number of Sites with One or More Respondents[a]	Early Survey (%)	Late Survey (%)	Adjusted Odds Ratio, Late Minus Early	p-value, Late Minus Early
Survey scale: Adaptive Reserve [continuous score; higher score=greater adaptive reserve]						
All sites	564	296	65.07	61.08	**–3.97 (–5.37 to –2.56)**	**<0.0001**
High RAS*	296	152	66.16	59.83	**–6.30 (–8.28 to –4.32)**	**<0.0001**
Low RAS	268	144	63.86	62.44	–1.41 (–3.28 to 0.45)	0.138
Difference, high minus low RAS	NA	NA	2.30	–2.61	**–4.89 (–7.60 to –2.17)**	**<0.001**
Survey scale: Relationship Infrastructure [continuous score; higher score=better]						
All sites	564	296	65.25	62.22	**–3.04 (–4.509 to –1.58)**	**<0.0001**
High RAS*	296	152	66.44	61.27	**–5.17 (–7.20 to –3.14)**	**<0.0001**
Low RAS	268	144	63.95	63.26	–0.71 (–2.74 to 1.33)	0.495
Difference, high minus low RAS	NA	NA	2.50	–1.99	**–4.46 (–7.33 to –1.59)**	**0.002**

* p<0.05. Bold indicates statistically significant results (p<0.10).
[a] Of the 503 demonstration sites, 296 had at least one respondent to both the early and late CASE surveys. As detailed in Appendix A13, all analyses were performed at the individual respondent level, accounting for clustering at the site level.

8.3. Changes in Clinician and Staff Experience

As with the measures of clinic culture, CASE respondents also reported worsening professional experiences over time. Within the demonstration sites, clinicians and staff responses revealed statistically significant declines in work control and stress (Linzer et al., 2009), as well as declines in overall professional satisfaction, coupled with statistically significant increases in burnout, chaos, and intent to leave the practice. These findings did not differ between sites with higher and lower baseline RAS scores.

Among all CASE respondents, there were no statistically significant changes in "top of license" scores for physicians, nurse practitioners, physician assistants, nurses, educators, or clerks between the baseline and follow-up CASE survey. We also found that a statistically significant increase in "top of license" scores among nurses in sites with higher baseline RAS

scores was counterbalanced by a statistically significant decrease in scores at sites with lower baseline RAS scores. The opposite pattern prevailed for physicians, nurse practitioners, and physician assistants: There was a statistically significant increase in "top of license" scores among sites with lower baseline RAS scores, but not among sites with higher baseline RAS scores.

Similarly, there were no statistically significant changes in the percentage of clinicians reporting that they had sufficient time (at least 75 percent of the time necessary) to perform complete physicals, routine follow-up appointments, and urgent care appointments. Additional results from the CASE survey can be found in Appendix A13.

8.4. Chapter Summary and Conclusion

This chapter explored the barriers to and facilitators of change by examining the perspectives of clinicians and staff, using the results of a survey of clinicians and staff as well as the results of our qualitative interviews.

- The findings from the CASE survey suggest that, during the period of the demonstration, participating practices experienced significant stress that manifested in worsening survey results on multiple dimensions of practice culture and on multiple dimensions of professional satisfaction.
- Between the early and late CASE surveys, clinicians became increasingly aware that their sites were participating in a medical home demonstration project and were more likely to have seen a feedback report about becoming a medical home. However, sites with high baseline RAS scores were less likely to have found this information useful.
- Between the early and late CASE surveys, clinicians and staff reported significant worsening on multiple measures of clinic culture and teamwork. For most measures, the degree of worsening was significantly greater among sites with high baseline RAS scores than among sites with lower baseline RAS scores.
- Between the early and late CASE surveys, clinicians and staff reported significant reductions in overall professional satisfaction and corresponding increases in stress, burnout, chaos, and likelihood of leaving their practices. These changes were similar in sites with high and low baseline RAS scores.
- Fewer than one-third of responding clinicians reported easy access to subspecialists outside the practice, including mental health providers. The majority of CASE respondents reported that their practices were making efforts to increase access to mental health services, but there were no statistically significant changes in reported ease of access to mental health or other specialists between the early and late CASE surveys.

Concluding Thoughts on Key Policy Question 1

The fact that 70 percent of demonstration sites achieved NCQA Level 3 PCMH recognition by the end of the demonstration compared to only 11 percent of comparison sites speaks to the demonstration's effect as well as the determination of demonstration sites to become PCMHs

within the three-year time period. However, demonstration sites did not achieve the 90 percent recognition rate set as a goal for demonstration sites, and more than two out of three sites that achieved recognition did so during the demonstration's last year. Therefore, many sites did not have much time as fully functioning PCMHs in which to improve beneficiary processes and outcomes.

FQHCs made a number of changes within their practices to achieve medical home recognition. Many of these challenges were facilitated by financial and TA support received through the demonstration, as well as additional support received outside the demonstration. However, as noted in Chapter Three, site respondents generally felt that the care management fee payments—available only for Medicare beneficiaries attributed to demonstration FQHCs—were insufficient to cover the real costs of PCMH transformation. This led many sites to seek out other sources of funding to assist with the transformation.

As seen in Chapter Four, TA was not well coordinated until 18 months into the demonstration. However, once various TA resources were coordinated, sites began to make significant progress toward recognition, with a larger proportion of sites achieving transformation in the demonstration's final quarter.

Of note, comparison sites had access to nondemonstration financial and TA resources similar to those available to demonstration sites. Comparison site exposure to such resources might have had an effect on the evaluation's ability to identify differences between demonstration and comparison sites. However, we found strong evidence with qualitative analyses that demonstration sites were more focused than comparison sites on achieving NCQA Level 3 PCMH recognition and any recognition within the three-year window set by CMS. Demonstration sites consistently articulated more specific objectives, goals, plans, awareness of challenges, and strategies for addressing those challenges. The demonstration sites had a well-defined timeline for achieving their recognition goals. Comparison sites appeared to make similar practice changes as demonstration sites but often not to the same extent or depth. These differences were likely related to the fact that many comparison sites were not actively pursuing PCMH recognition or transformation and those that were not under the same pressure of the three-year time constraint.

Our mixed-methods approach allowed us to identify important predictors of medical home recognition. The analyses presented in Chapters Five through Eight showed the interactions of site characteristics, intervention components, challenges, and facilitators in relation to the achievement of NCQA Level 3 PCMH recognition. The analyses presented in Chapter Six indicated that external PCMH supports, including the intervention components, could help facilitate recognition; however, sites attaining recognition that started with high levels of medical homeness tended to have strengths in many areas, whether or not they utilized external PCMH supports. Importantly, the analyses emphasized the role of cultural readiness and change factors (high leadership support, stable change teams, and high change agent capacity) in supporting the achievement of recognition.

The change themes discussed in Chapters Seven and Eight highlight the challenges and complexities associated with PCMH transformation, as well as important facilitators of change, including a well-functioning EHR and strong leadership support. The challenges described by respondents during qualitative interviews and in the CASE survey also underscore the ongoing pressures experienced by providers and staff in the process of transforming to a medical home.

In summary, demonstration sites were markedly more likely than comparison sites to achieve NCQA Level 3 PCMH recognition (70 percent versus 11 percent). In the next chapters, we address whether the demonstration and its correlates successfully achieved its second major objective—improvement in beneficiary outcomes consistent with the goals of advanced primary care and those of CMS.

KEY POLICY QUESTION 2

In the next three chapters, we address issues related to Key Policy Question 2: *Do demonstration sites deliver better beneficiary processes and outcomes than comparison sites?*

We hypothesized that, after exposure to interventions designed to help FQHCs become PCMHs, beneficiaries associated with demonstration sites would see more improvements in utilization, care processes, outcomes, and experiences than would beneficiaries attributed to comparison sites. This is part of the "quality-of-care cascade" we described in Chapter One, where we hypothesized that sites participating in the demonstration would have greater exposure than comparison sites to elements promoting PCMH transformation, leading to greater likelihood of achieving NCQA Level 3 PCMH recognition and positive observable changes in beneficiary outcomes.

We begin Chapter Nine by describing the characteristics of beneficiaries attributed, respectively, to the demonstration and comparison groups. Then we present the results of our analyses using claims data to assess how the demonstration affected utilization, processes, and costs for demonstration beneficiaries relative to comparison beneficiaries.

In Chapter Ten we present longitudinal analyses using beneficiary survey data to understand how the demonstration affected patient experience in such areas as loyalty and timeliness, access, receipt of evidence-based care, coordination of care, and health status outcomes.

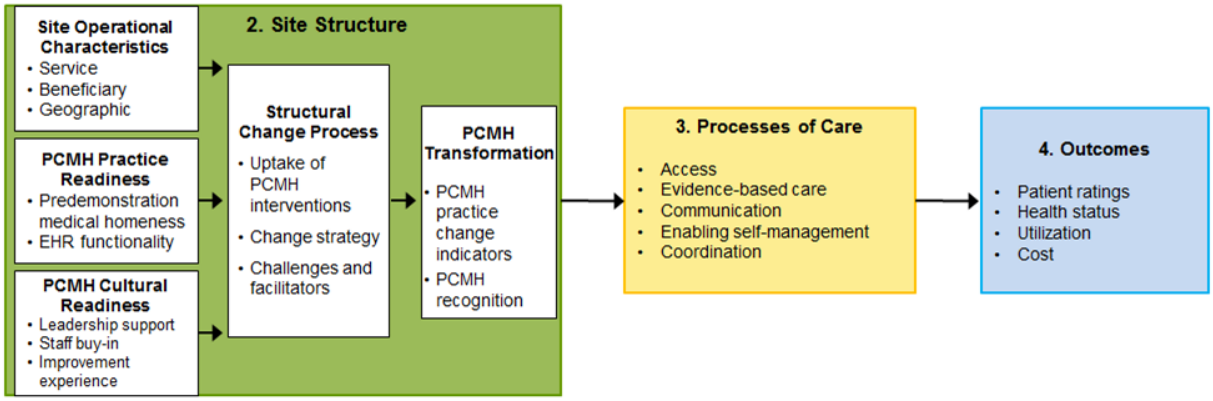
While the analyses in Chapters Nine and Ten answer the question, "What is the effect of participating in the demonstration on beneficiary processes and outcomes?" the analyses in Chapter Eleven answer the question, "What is the effect of achieving NCQA Level 3 PCMH recognition on beneficiary outcomes among sites participating in the demonstration?" We use an approach known as "mediation analysis" to identify the effects of achieving medical home recognition on the beneficiary outcomes seen in Chapters Nine and Ten, and also to recognize the effects of other factors (such as participation in care coordination, QI initiatives, and public health programs) on those outcomes.

9. Effects of the Demonstration on Utilization, Care Processes, and Spending

In this chapter we present the first set of results from our analyses to answer the question: What is the effect of participating in the demonstration on beneficiary processes and outcomes? In these analyses, we used claims data to examine the impact of the demonstration on utilization, process measures of quality, and spending. As will be shown in this chapter, although we found some significant effects from the demonstration, these effects were small, for reasons we will discuss below.

In this chapter and Chapter Ten, we focus on the three components of our conceptual model shown in Exhibit 9.1.

Exhibit 9.1. Conceptual Model of Factors Affecting Attainment of PCMH Recognition



Users of FQHCs included large numbers of Medicaid beneficiaries. To understand the effect of the demonstration in this area, we examined utilization among a sample of Medicaid beneficiaries in eight states. We focused only on utilization measures because of data limitations, including lack of data on payments for services provided to managed care enrollees and concerns about the reliability of procedure coding. (See Appendix C for additional details). The results of these analyses are presented in Section 9.4.

To establish the context for these examinations of the demonstration effect, we begin this chapter by first examining the characteristics of the demonstration and comparison cohorts used for these analyses. Then we look at results related to utilization process measures, and spending for demonstration versus comparison beneficiaries.

A more detailed discussion of the characteristics of beneficiaries entering and exiting the cohort is provided in Appendix E.

9.1. Characteristics of Demonstration and Comparison Site Beneficiaries

The Medicare population seeking care at FQHCs differs in some ways from the Medicare population as a whole. As of June 2015, 83 percent of Medicare beneficiaries were elderly (age 65 years or older) and 17 percent were nonelderly disabled (Kaiser Family Foundation, 2016). In contrast, about 50 percent of Medicare beneficiaries who used FQHCs received Medicare due to their disabled status. Furthermore, 47 percent were dual-eligible. The Medicare population at FQHCs thus presented not only the usual complex, multimorbid problems of many aged Medicare beneficiaries, but also introduced the substantial needs of dual-eligible patients with a higher proportion of long-standing severe and chronic conditions, a history of underusing medical care, and a constellation of problems that reflect the social determinants of health.

Overall, this evaluation sample comprised 730,353 beneficiaries, with 269,364 beneficiaries attributed to demonstration FQHCs and 460,989 beneficiaries attributed to comparison FQHCs. We analyzed a "rolling entry" cohort, which consisted of beneficiaries who were attributed to demonstration or comparison FQHCs for the first time during either the baseline, first, or second years of the demonstration. This evaluation sample comprised three distinct cohorts of beneficiaries, who were attributed to the demonstration or comparison FQHC that provided most of their primary care visits. The three cohorts included: (1) beneficiaries who were first attributed during the year preceding the demonstration (i.e., "baseline attribution cohort"), (2) beneficiaries who were first attributed to a site during the first year of the demonstration (i.e., "Year 1 attribution cohort"), and (3) beneficiaries who were first attributed during the second year of the demonstration (i.e., "Year 2 attribution cohort") (Exhibit 9.2).[47] The baseline attribution cohort alone contributed data to estimates of the demonstration's impact in its first year; the baseline and Year 1 attribution cohorts contributed data to Year 2 impact estimates; and all three cohorts contributed data to the Year 3 estimates.[48]

For the purposes of evaluation, each beneficiary remained attributed for the duration of the demonstration to the site to which he or she was first attributed. For example, a beneficiary who

[47] For purposes of this report, the evaluation excluded beneficiaries who were first attributed to a site during the third year of the demonstration because this cohort did not have a full year of measured outcomes.

[48] The analysis adjusted for a beneficiary's year of first entry into the demonstration to account for systematic differences among the three cohorts that might affect outcomes. (We report the results stratified by the three cohorts that comprise the rolling entry cohort in Appendix G, Exhibits G.1–G.3).

was first attributed to a demonstration FQHC but then was later attributed to an FQHC that was neither in the demonstration nor in a comparison group remained part of the demonstration sample throughout the evaluation period. This "intent-to-treat" approach ensures that beneficiaries are consistently analyzed according to their initial assignment to a demonstration or comparison FQHC. This approach allows the analysis to account for beneficiaries who were assigned to the demonstration to continue to be affected by changes that occurred during his or her time in the demonstration, even after leaving a demonstration site for a comparison site. Although one limitation of the intent-to-treat analysis is that a beneficiary's usual source of care may change over time,[49] by the end of the demonstration we observed that only 11.8 percent of demonstration beneficiaries and 11.4 percent of comparison beneficiaries in the baseline attribution cohort were attributed to a site other than that to which they were attributed in the baseline period. These findings suggest that the demonstration effect is unlikely to be biased toward a null result because of high levels of beneficiary switching from demonstration sites to sites that were not receiving similar levels of PCMH transformation support.

Exhibit 9.2. Demonstration and Comparison Beneficiary Sample Sizes by Year of First Attribution

Year of First Attribution	Demonstration FQHCs N (%)	Comparison FQHCs N (%)	Overall N (%)
Year preceding demonstration	152,300 (56.5)	275,846 (59.8)	428,146 (58.6)
Demonstration Year 1	64,837 (24.1)	103,368 (22.4)	168,205 (23.0)
Demonstration Year 2	52,227 (19.4)	81,775 (17.7)	134,002 (18.3)
All beneficiaries included in claims analyses	269,364 (100)	460,989 (100)	730,353 (100)

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
NOTE: The baseline year corresponds to the year prior to the start of the demonstration (November 1, 2010–October 31, 2011).

Beneficiaries Attributed to Demonstration and Comparison FQHCs

We found that demonstration and comparison beneficiaries were largely comparable in their sociodemographic and clinical characteristics (in unweighted analyses), with few exceptions (see Exhibit 9.3). However, demonstration and comparison beneficiaries were attributed to FQHCs that differed in notable ways. For example, demonstration beneficiaries were more likely to be attributed to sites that were members of large multisite grantees; sites that received grants authorized under the ACA to build capacity, improve facilities, or add new delivery sites; sites that participated in CMS-sponsored demonstration programs that use a shared savings design,

[49] "Intent-to-treat" means that beneficiaries are analyzed in the groups to which they were originally assigned.

such as the Pioneer ACO program; and sites that received supplemental funding from HRSA to pursue PCMH recognition.

Nonetheless, such differences were not associated with differential trends in outcomes for demonstration and comparison beneficiaries in the period before the demonstration began (Exhibit I.13). In addition, we used statistical adjustment in combination with propensity score weights in all analyses to adjust for differences in these characteristics between demonstration and comparison FQHCs (see Appendix F).

Exhibit 9.3. Characteristics of Beneficiaries Attributed to Demonstration or Comparison Sites

Characteristics	Beneficiaries Attributed to Demonstration FQHCs (n=269,364)	Beneficiaries Attributed to Comparison FQHCs (n=460,989)
Beneficiary characteristics		
Age as of first attribution quarter: <65 years, n (%)	120,558*** (44.8)	201,626 (43.7)
65–74 years	93,870*** (34.8)	164,181 (35.6)
75–84 years	39,862*** (14.8)	69,636 (15.1)
85+ years	15,074*** (5.6)	25,546 (5.5)
Gender: Male, n (%)	121,380 (45.1)	206,640 (44.8)
Female	147,984 (54.9)	254,349 (55.2)
Race/Ethnicity: White, n (%)	185,156*** (68.7)	318,147 (69.0)
Black	46,656*** (17.3)	86,259 (18.7)
Asian	10,343*** (3.8)	9,813 (2.1)
Hispanic	18,437*** (6.8)	33,635 (7.3)
Other/Unknown	8,772*** (3.3)	13,135 (2.8)
Disabled, n (%)	143,963*** (53.4)	242,827 (52.7)
Dual eligible, n (%)	128,937*** (47.9)	213,533 (46.3)
End-stage renal disease (ESRD), n (%)	1,301** (0.5)	2,435 (0.5)
Nursing home resident, n (%)	5,221*** (1.9)	7,797 (1.7)
Clinical conditions: Autoimmune disorders, n (%)	11,685 (4.3)	19,961 (4.3)
Cancer	21,415 (8.0)	37,120 (8.1)
Cardiovascular disorders	33,816*** (12.6)	60,261 (13.1)
Chronic heart failure	31,895 (11.8)	54,833 (11.9)
Chronic lung disorders	42,263 (15.7)	72,344 (15.7)
Diabetes	86,726*** (32.2)	152,749 (33.1)
HIV	3,557*** (1.3)	5,586 (1.2)
Neurological disorders	33,273 (12.4)	56,227 (12.2)
Severe mental health disorders	46,703*** (17.3)	73,152 (15.9)
Stroke	12,316*** (4.6)	19,655 (4.3)
Substance abuse disorders	13,724*** (5.1)	20,957 (4.5)
Hierarchical Condition Category score, mean (standard deviation [SD])	1.14*** (1.03)	1.13 (1.03)
Number of qualifying services in year prior to attribution, mean (SD)	5.0 (4.4)	5.0 (4.3)
Site-level characteristics		
Location: Metro, n (%)	192,209*** (71.4)	303,986 (65.9)

Characteristics	Beneficiaries Attributed to Demonstration FQHCs (n=269,364)	Beneficiaries Attributed to Comparison FQHCs (n=460,989)
Nonmetro–urban	46,906*** (17.4)	90,381 (19.6)
Nonmetro–rural	30,249*** (11.2)	66,622 (14.5)
PCA region: Central, n (%)	68,619*** (25.5)	97,788 (21.2)
Mid-Atlantic	26,110*** (9.7)	62,801 (13.6)
Northeast	39,362*** (14.6)	52,720 (11.4)
Southeast	35,504*** (13.2)	83,596 (18.1)
West	45,822*** (17.0)	70,183 (15.2)
West-Central	53,947*** (20.0)	93,901 (20.4)
Household poverty in census tract, mean % (SD%)	21.2*** (11.8)	23.2 (12.7)
FQHC age: 1–9 years, n (%)	92,617*** (34.4)	151,071 (32.8)
Age 10–19 years	69,069*** (25.6)	103,635 (22.5)
Age 20–29 years	27,143*** (10.1)	59,366 (12.9)
Age 30–39 years	54,970*** (20.4)	102,074 (22.1)
Age 40+ years	20,589*** (7.6)	32,919 (7.1)
Missing age	4,976*** (1.8)	11,924 (2.6)
Number of service delivery sites: 1 site, n (%)	6,463*** (2.4)	36,389 (7.9)
2–10 sites	154,655*** (57.4)	309,549 (67.1)
11+ sites	108,246*** (40.2)	115,051 (25.0)
Number of providers: Primary care, mean (SD)	6.5*** (6.2)	7.7 (8.1)
Specialists	1.1*** (2.4)	1.2 (2.8)
Number of Medicare beneficiaries in baseline attribution cohort, mean (SD)	430.6*** (369.1)	624.7 (502.7)
Total revenue per site in millions, mean (SD)	2.3*** (1.9)	2.5 (2.0)
ACA grantee, n (%)	144,272*** (53.6)	168,510 (36.6)
HCCN grantee, n (%)	153,214*** (56.9)	249,764 (54.2)
Quality accreditation, n (%)	97,980*** (36.4)	134,687 (29.2)
CMS Shared Savings Demonstration Participation, n (%)	58,853*** (21.8)	73,487 (15.9)
PCMH supplemental funding FY 2011, n (%)	248,877*** (92.4)	331,425 (71.9)
Participation in HRSA PCMH Initiative, n (%)	155,900*** (57.9)	177,047 (38.4)
NCQA recognition (2008 standards): None, n (%)	245,329*** (91.1)	439,457 (95.3)
Level 1 recognition	1,868*** (0.7)	5,073 (1.1)
Level 2 recognition	1,065*** (0.4)	3,838 (0.8)
Level 3 recognition	21,102*** (7.8)	12,621 (2.7)

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
** p<0.01; *** p<0.001.
NOTE: These results are presented without weighting using propensity scores to highlight the observed similarities and differences between beneficiaries attributed to demonstration and comparison sites. However, other analyses presented throughout these reports (e.g., those estimating demonstration effects and medical home effects) are propensity score weighted as described in Appendixes B, C, and N. Beneficiaries are included in this table if they were first attributed to a demonstration or comparison site based on utilization in the year before the demonstration, in demonstration Year 1, or in demonstration Year 2. Asterisks indicate statistically significant differences between beneficiaries attributed to demonstration and comparison sites.

Before conducting the analyses, we assessed the potential for bias due to differences between the demonstration and comparison groups. We looked in particular at two factors that had the potential to introduce changes in the composition of the demonstration and comparison cohorts over time: (1) entry of beneficiaries into the sample after the demonstration had begun (i.e., "late entry")[50] and (2) attrition from the evaluation sample before the demonstration ended.[51] We had hypothesized that demonstration sites could experience substantial changes in their patient mix as they became medical homes (e.g., higher prevalence of beneficiaries with chronic conditions or populations dually eligible for Medicare and Medicaid), which might bias estimates of the demonstration's impact. These results of these analyses are reported in the next section.

Beneficiaries Attributed to Demonstration and Comparison FQHCs for the First Time After the Start of the Demonstration

There were substantial changes in the composition of demonstration and comparison FQHCs over the demonstration period due to the number of beneficiaries who were first attributed to the sample after the demonstration had begun. However, both the demonstration and the comparison groups changed in roughly similar ways, so they remained comparable throughout the evaluation period.

Among all Medicare beneficiaries attributed to the demonstration or comparison FQHCs at least once over the three-year period, approximately 44 percent of all demonstration beneficiaries and 40 percent of all comparison beneficiaries were first attributed to a demonstration or comparison sites in Year 1 or Year 2 (i.e., following the start of the demonstration). The characteristics of the baseline attribution cohort and the late entry cohorts (Year 1 attribution cohort and Year 2 attribution cohort) varied in a number of important ways. For example, beneficiaries in the Year 1 and Year 2 attribution cohorts were more likely than beneficiaries in the baseline attribution cohort to be under 65 years of age, disabled, living in metropolitan areas, and less likely to be dually eligible for Medicare and Medicaid. Beneficiaries in the Year 1 and Year 2 attribution cohorts also had lower rates of primary care visits and lower rates of most comorbidities compared to beneficiaries in the baseline attribution cohort, but were more likely to have severe mental health or substance abuse disorders.

However, despite differences between the baseline attribution cohort and beneficiaries in the Year 1 and Year 2 attribution cohorts, we found no major differences between demonstration and comparison beneficiaries in the characteristics of each cohort. This finding provides some reassurance that any differences in outcomes that we observed between demonstration and

---

[50] Throughout this report, beneficiaries attributed to demonstration or comparison FQHCs after the start of the demonstration are referred to as "late entrants."

[51] Reasons for attrition from the evaluation sample could include: loss of eligibility for Part A or Part B coverage, enrollment in Medicare Advantage, development of ESRD, or death.

comparison beneficiaries were likely due to an effect of the demonstration rather than a systematic change in the beneficiaries in the analysis.

Beneficiaries Leaving Demonstration and Comparison FQHCs Before the End of the Demonstration Period

Beneficiaries became ineligible to continue as part of the evaluation cohorts for five reasons: loss of Part A or B eligibility, enrollment in Medicare Advantage, change in Medicare entitlement status through the development of ESRD, use of hospice care, or death. Overall, 21 percent of beneficiaries attributed to demonstration sites and 21 percent of beneficiaries attributed to comparison sites left the demonstration during the three-year study period. However, we found no major differences between demonstration and comparison beneficiaries in the reasons for attrition.

Overall Changes in Demonstration and Comparison Group Characteristics over Time

Late entry and attrition contributed to minor changes in the composition of the evaluation sample (including both demonstration and comparison groups) over the course of the demonstration (See Appendix E, Exhibit E.4). For example, there was a net increase in the percentage of beneficiaries younger than age 65, and a slight decrease in the percentage of dual-eligible beneficiaries, the prevalence of most comorbidities, and the number of primary care visits in the year prior to attribution. These changes were comparable among both demonstration and comparison beneficiaries. Statistical significance tests of differences in trends in beneficiary or site characteristics between demonstration and comparison sites revealed some differences (primarily due to the large beneficiary sample size). However, the magnitude of the differences were small in each case.

9.2. Demonstration's Effects on Utilization, Quality, and Spending

The descriptive analyses presented in the prior section indicate that differences between the demonstration and comparison groups regarding late entry and early attrition were minimal and not likely to bias the evaluation's difference-in-differences analyses. In addition, tests of parallel trends in all study outcomes during the pre-demonstration period indicated that the difference-in-differences model assumptions were satisfied (See Exhibit I.13 for a subset of these tests). With these conditions met, we assessed differences over time between beneficiaries attributed, respectively, to demonstration and comparison FQHCs, to assess how the demonstration affected utilization of services, process measures of quality, and Medicare expenditures.

We conducted two types of analyses: (1) We modeled the demonstration's impact separately for each year of the three-year demonstration period (we refer to this as the "year-by-year"

analyses); and (2) we conducted a second set of "cumulative effect" analyses to model the demonstration's impact as an average of yearly effects. Although results of the cumulative effect analysis generally resembled conclusions from the year-by-year analysis, the cumulative effect analysis tended to produce smaller estimates because the demonstration's impacts were averaged over early years of the demonstration, when FQHCs were just beginning to transform their practices. On the other hand, the year-by-year analyses allowed us to provide a more precise view of each year's demonstration effect.

As noted earlier, we analyzed a "rolling entry" cohort, which consisted of beneficiaries who were attributed to demonstration or comparison FQHCs for the first time during either the baseline, first, or second years of the demonstration: The baseline attribution cohort alone contributed data to estimates of the demonstration's impact in its first year; the baseline and Year 1 attribution cohorts contributed data to Year 2 impact estimates; and all three cohorts contributed data to the Year 3 estimates.[52]

We used a difference-in-differences approach to compare trends between demonstration and comparison sites during the demonstration period relative to the year prior to the demonstration. We used propensity weights to improve the balance between demonstration and comparison groups on observable beneficiary-, site-, grantee-, and area-level characteristics. Most of these characteristics were also included as adjustment variables in each regression model.[53]

Because the demonstration's impact on utilization might be sensitive to the attribution rule—in particular, to the inclusion of beneficiaries who had only a single visit to their attributed FQHC and for whom the attributed FQHC may not have been their usual source of care—we conducted parallel analyses that restricted the cohort to the population of beneficiaries who had *at least two visits* to their attributed FQHC at the time each beneficiary was first attributed to a demonstration or comparison FQHC (Appendix G). Analyses involving this cohort, which represented 79 percent of the rolling-entry cohort, did not produce substantively different results compared with our main analysis for most utilization, process, and expenditure measures.[54]

---

[52] As noted earlier, we analyzed a "rolling entry" cohort. The baseline attribution cohort alone contributed data to estimates of the demonstration's impact in its first year; the baseline and Year 1 attribution cohorts contributed data to Year 2 impact estimates; and all three cohorts contributed data to the Year 3 estimates. The analysis adjusted for a beneficiary's year of first entry into the demonstration to account for systematic differences among the three cohorts that might affect outcomes. (We report the results stratified by the three cohorts that comprise the rolling entry cohort in Appendix G, Exhibits G.1 to G.3.)

[53] These variables are listed in Appendix E.

[54] Compared with the rolling-entry cohort, analyses using this cohort found larger demonstration effects on total primary care visits in each year of the demonstration and higher inpatient spending in Year 3. All other demonstration effects on utilization, spending, and process measures were similar in magnitude and statistical significance between the two cohorts.

9.3. Utilization Among Medicare Beneficiaries

We estimated changes across each of the three years for overall utilization, likelihood of any utilization, and level of utilization among service users associated with the demonstration in ambulatory settings (excluding the ED), EDs, and inpatient settings, as shown in Exhibit 9.4. These methods are described in Appendix B. Exhibit 9.4, as well as the other year-by-year exhibits that follow, contains three panels to describe three demonstration impacts on, in order, (A) overall utilization or Medicare Part A and B expenditures per beneficiary per year, (B) the likelihood that a beneficiary had any utilization or spending, and (C) the level of utilization or spending among beneficiaries that had any service use. We included all three types of impacts because many of the analyses included a large proportion of beneficiaries with no utilization or no spending in a particular category. The three types of impacts are reported separately in columns A, B, and C and provide useful information about the demonstration's effects on each outcome while also showing the combined overall difference-in-differences result (shown in column A).

Details regarding the cumulative effect of the demonstration on utilization (i.e., aggregated across all three demonstration years) are displayed in Exhibit 9.5. Additionally, demonstration effects on continuity of care are presented in Appendix I, and demonstration effects on subgroups are presented in Appendix J.

Exhibit 9.4. Year-by-Year Demonstration Impacts on Claims-Based Measures of Health Care Utilization

Outcome Measure	Utilization in the Year Prior to the Demonstration: Overall Utilization (per 1,000 beneficiaries)	Utilization in the Year Prior to the Demonstration: Likelihood of Any Utilization (percentage points)	Demonstration's Impact on Utilization: A. Overall Utilization (per 1,000 beneficiaries) Year 1	A. Year 2	A. Year 3	B. Likelihood of Any Utilization (percentage points) Year 1	B. Year 2	B. Year 3	C. Level of Utilization Among Service Users (per 1,000 beneficiaries) Year 1	C. Year 2	C. Year 3
Non-ED ambulatory visits[a]											
FQHC visits	4,456.8	98.3	**49.66*** **	**97.17*** **	**105.19*** **	**3.54*** **	**5.57*** **	**6.22*** **	–8.79	–26.76	–21.49
p-value			**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.571	0.107	0.184
Non-FQHC PCP visits	515.0	23.6	–8.28	–11.49	13.75	–0.10	0.26	**1.03*** **	–44.42	–78.95	–67.39
p-value			0.509	0.411	0.328	0.657	0.217	**<0.001**	0.283	0.051	0.107
PCP visits	4,698.5	96.8	**39.09***	**63.00*** **	**78.71*** **	**1.26*** **	**1.55*** **	**1.33*** **	0.61	–7.11	8.88
p-value			**0.019**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.974	0.716	0.646
Specialist visits	2,910.5	64.1	10.70	–5.83	–3.54	**0.49***	0.06	**0.68*** **	–6.06	–17.90	13.97
p-value			0.472	0.718	0.820	**0.027**	0.765	**<0.001**	0.809	0.485	0.574
ED utilization											
Total ED visits[b]	998.1	40.4	**23.47***	**26.10** **	**31.38*** **	0.31	**0.93*** **	**0.69*** **	35.46	15.26	**57.10***
p-value			**0.010**	**0.002**	**<0.001**	0.197	**<0.001**	**<0.001**	0.155	0.534	**0.016**
Outpatient-only ED visits	797.6	34.8	**21.01** **	**24.48** **	**32.66*** **	**0.48***	**0.84*** **	**0.67*** **	35.30	11.74	**52.04***
p-value			**0.009**	**0.001**	**<0.001**	**0.041**	**<0.001**	**<0.001**	0.160	0.643	**0.026**
ACSC ED visits	78.3	5.2	0.66	–1.07	0.67	0.08	0.09	0.13	11.93	–18.77	22.98
p-value			0.729	0.587	0.702	0.475	0.337	0.135	0.835	0.740	0.672
Inpatient utilization											
Total admissions	288.8	18.2	4.67	**6.83***	2.72	0.22	**0.66*** **	**0.42** **	–18.82	**–46.36†**	–11.07
p-value			0.207	**0.034**	0.385	0.262	**<0.001**	**0.006**	0.462	0.082	0.682

Outcome Measure	Utilization in the Year Prior to the Demonstration		Demonstration's Impact on Utilization								
	Overall Utilization (per 1,000 beneficiaries)	Likelihood of Any Utilization (percentage points)	A. Overall Utilization (per 1,000 beneficiaries)			B. Likelihood of Any Utilization (percentage points)			C. Level of Utilization Among Service Users (per 1,000 beneficiaries)		
			Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
ACSC admissions	38.5	2.8	1.05	0.85	–1.12	0.03	0.00	**–0.13†**	47.92	21.64	16.18
p-value			0.382	0.456	0.326	0.734	0.960	0.063	0.452	0.758	0.823
Inpatient readmissions[c]	—	15.2	—	—	—	0.06	–0.76	–0.44	—	—	
p-value						0.902	0.121	0.338			

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] FQHC visits included any visit to an FQHC regardless of provider specialty. PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to specialists at primary care clinics are identified by evaluation and management (E&M) visit codes.

[b] Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission. Observation stays are included in both total ED visits and our measure of outpatient-only ED visits.

[c] Inpatient readmissions were measured as hospital-wide all-cause unplanned readmissions and were modeled as a binary indicator (i.e., whether or not a beneficiary was hospitalized within 30 days of discharge from the hospital) rather than as a count of readmissions per beneficiary. Thus, a two-part model was not used. The estimate in the year prior to the demonstration represented the percentage of discharges (rather than beneficiaries) that were associated with a readmission within 30 days.

Utilization in Non-ED Ambulatory Settings

The main finding from our utilization analyses was that demonstration sites were associated with larger increases in non-ED utilization than comparison sites (Exhibit 9.4). Beneficiaries attributed to demonstration sites had significantly higher rates of visits to FQHCs (50 more visits per 1,000 beneficiaries in Year 1 relative to beneficiaries attributed to comparison sites controlling for baseline differences)—a difference that more than doubled by the end of the demonstration (105 more visits per 1,000 beneficiaries). Similarly, beneficiaries attributed to demonstration sites had higher rates of visits to primary care providers, including physicians and nurse practitioners, and regardless of whether the physician practiced at an FQHC or outside of an FQHC (39 more visits per 1,000 beneficiaries in Year 1 relative to beneficiaries attributed to comparison sites controlling for baseline differences).[55] This difference doubled by the third year of the demonstration (79 more visits per 1,000 beneficiaries).

Both of these findings suggest that the demonstration may have been expanding beneficiaries' access to primary care services. As described in the qualitative interviews with site leaders, demonstration sites reported that many new FQHC patients required "a lot of catch-up" care for unmet needs. Combined with more-consistent documentation and use of care plans with the PCMH model (see Chapter Seven), additional FQHC visits may have been required to address multiple identified, as well as previously unidentified, patient needs. For patients with multimorbidity, a series of visits was often required to address acute and chronic conditions, while also introducing prevention strategies. As one physician noted:

> Before, we would try to address too many issues [in a visit]; that's where patients get a little confused. So I'll say—okay, let's pick the top issues today and then we'll have you come back in two weeks and we can spend more time with those other issues. And patients are very happy with that because they feel they're getting more close attention to each of their issues.

Because FQHCs typically do not provide specialty care services on site, instead referring patients to specialists in the community, we expected that the demonstration would have a much smaller effect on specialty care utilization than on primary care utilization.[56] As expected, we observed a small, statistically significant increase in the proportion of beneficiaries attributed to demonstration sites receiving at least one specialty care visit relative to beneficiaries attributed to

---

[55] Primary care physician specialties included internal medicine, general practice, family medicine, obstetrics and gynecology, adult health, community health, family practice, primary care, women's health, gerontology, pediatrics, and preventive medicine, as defined by taxonomy codes used in the National Plan and Provider Enumeration System.

[56] Specialist categories included cardiology, allergy and immunology, dermatology, emergency, endocrinology, ear nose throat, optometry, gastroenterology, hematology and oncology, hospice, mental health, neurology, nephrology, orthopedics, surgery, urology, and others.

comparison sites (less than 1 percentage point difference in Years 1 and 3 of the demonstration). These results suggest that demonstration FQHCs may have been more consistent with their documentation of beneficiary specialty requirements and better at tracking and follow-up of specialty care referrals—e.g., "closing the loop" on referrals with specialists, patients, and providers (see Chapter Seven). During qualitative interviews, site leaders acknowledged that they viewed PCMH-related changes as setting the stage for an increase in access to and use of specialty appointments:

> We always processed specialist referrals through our EHR system, but with the requirements of a patient-centered medical home . . . it's not just enough to do the referral and say that you followed up. Now you also have to document when you called, why the patient didn't get the referral done, and follow back with the provider. And then, what did the provider say?

ED Utilization

An unexpected finding was a consistently increasing trend in ED visits over the three years for demonstration sites relative to comparison sites (Exhibit 9.4). In Year 1, beneficiaries attributed to demonstration sites had 23 more ED visits per 1,000 beneficiaries than did beneficiaries attributed to comparison sites, a number that grew to 31 additional visits per 1,000 beneficiaries by the third year of the demonstration. In contrast with the utilization patterns in non-ED ambulatory settings, both the probability of using the ED increased among all demonstration beneficiaries and the level of ED use increased among those who had any visits (although the intensity increased only in the third year of the demonstration). The results were similar when examining both ED visits overall and the subset of "outpatient-only" ED visits, which were those that were not followed by admission to the hospital and comprise the vast majority of ED visits.

An increase in ED visit rates concurrent with an increase in FQHC visits and primary care visits may indicate that demonstration sites were increasing beneficiaries' awareness of specialty needs not available through FQHCs; increased awareness could have stimulated beneficiaries to seek specialty care through EDs instead (see qualitative findings on challenges with FQHC access to specialty care in Chapter Seven). In addition, after-hours call services implemented during the demonstration, although typically expected to "prevent the need to go to the emergency room," were acknowledged in some instances to result in recommendations to visit the ED:

> A PCMH component we've implemented is an after-hours call service, through a third party, and we have a lot of phone calls from patients, so I do know that they know of that resource. They can get advice from the call service. "I really need to go to the emergency room, can I wait until the morning? What should I do?"

> If there's anything questionable, [our after-hours call center] is sending them to the ER. . . . If there's anything questionable they will advise a visit to the ED. We don't want them to *not* go to the ED if they *need* to.

The increase in ED use is statistically significant; however, the effect may be too small to be policy relevant. The increase may reflect mixed effects whereby some practices in the process of PCMH transformation wanted to ensure that patients had sufficient access to care, on the one hand, but did not yet have sufficient infrastructure to provide such care, on the other, and so asked patients to use the ED to access care during hours when the FQHC is closed.

Inpatient Utilization

The demonstration had scant effect on inpatient admission rates—both overall or specifically for ACSC admissions (Exhibit 9.4).[57] Similarly, the demonstration did not affect inpatient readmission rates. We expected the demonstration to have few impacts on ACSC admissions because of the low frequency of these events in our target population. For example, only about 4 percent of demonstration and comparison beneficiaries had at least one ACSC admission during the baseline year.

FQHCs may have limited ability to improve rates of readmissions unless they are aware of admissions involving their patients and can coordinate closely with hospitals at the time of discharge. While implementing such systems for coordinating with hospitals is part of the NCQA PCMH recognition criteria, site leaders in the qualitative interviews (discussed in Chapter Seven) noted challenges in developing these capabilities even within the three years of the demonstration. Challenges included difficulty in receiving timely notification of patient admissions and discharges from hospitals (e.g., lack of interoperability with or access to hospital EHR systems, relying on hospital staff to manually notify the FQHC, and time-intensive effort by FQHC staff to build relationships and follow up with hospitals) and in obtaining this information consistently from all hospitals regularly utilized by the FQHC's patients.

Cumulative Demonstration Effect on Utilization

Findings from the cumulative demonstration effect on utilization measures are fairly consistent with the year-by-year results. We observed significant increases in FQHC, PCP, ED, and outpatient-only ED visits over all three years of the demonstration period (Exhibit 9.5). By Year 3, beneficiaries attributed to demonstration sites had rates of 82 more FQHC visits per 1,000 beneficiaries and 67 more PCP visits per 1,000 beneficiaries relative to beneficiaries attributed to comparison sites. The significant increase for total ED visits by Year 3 (30 visits per 1,000 beneficiaries) is largely influenced by the rise of outpatient ED visits (26 visits per 1,000

[57] Ambulatory care sensitive conditions included short-term diabetes complications (ketoacidosis, hyperosmolarity, coma); long-term diabetes complications (renal, eye, neurological, or circulatory); COPD or asthma in older adults; hypertension; congestive heart failure; angina without procedure; uncontrolled diabetes; asthma in younger adults; and lower-extremity amputation among patients with diabetes.

beneficiaries). One notable difference between the two analyses is that the cumulative effect for total admissions is significant in both Years 2 and 3, with six admissions per 1,000 beneficiaries by Year 3.

Exhibit 9.5. Cumulative Effect Analysis of Demonstration on Claims-Based Measures of Health Care Utilization

	Cumulative Demonstration Effect (per 1,000 beneficiaries)					
	Year 1		Year 2		Year 3	
Outcome Measure[a]	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
FQHC visits	**49.66*** (13.40)**	**<0.001**	**75.23*** (11.09)**	**<0.001**	**82.47*** (9.96)**	**<0.001**
Non-FQHC PCP visits	–8.28 (12.53)	0.509	–2.28 (12.04)	0.850	5.63 (11.97)	0.638
PCP visits	**39.09* (16.61)**	**0.019**	**54.45*** (14.02)**	**<0.001**	**67.37*** (12.77)**	**<0.001**
Specialist visits	10.70 (14.87)	0.472	3.68 (13.42)	0.784	0.23 (12.80)	0.986
Total ED visits[b]	**23.47** (9.08)**	**0.010**	**25.41*** (7.62)**	**<0.001**	**30.27*** (7.02)**	**<0.001**
Outpatient-only ED visits	**21.01** (8.05)**	**0.009**	**25.04*** (6.74)**	**<0.001**	**26.45*** (6.12)**	**<0.001**
ACSC ED visits	0.66 (1.89)	0.729	0.10 (1.69)	0.954	0.94 (1.52)	0.535
Total admissions	4.67 (3.70)	0.207	**6.48* (2.82)**	0.021	**5.72* (2.52)**	**0.023**
Inpatient ACSC admissions	1.05 (1.20)	0.382	0.98 (0.98)	0.315	0.29 (0.89)	0.746
Inpatient readmissions, percentage points[c]	0.06 (0.51)	0.902	–0.34 (0.41)	0.406	–0.39 (0.37)	0.287

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

* p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] FQHC visits included any visit to an FQHC regardless of provider specialty. Total PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Total specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to specialists at primary care clinics are identified by E&M visit codes.

[b] Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission. Observation stays are included in both total ED visits and in our measure of outpatient-only ED visits.

[c] Inpatient readmissions were measured as hospital-wide all-cause unplanned readmissions and were modeled as a binary indicator (i.e., whether or not a beneficiary was hospitalized within 30 days of discharge from the hospital) rather than as a count of readmissions per beneficiary.

9.4. Utilization Among Medicaid Patients

We examined the impact of the demonstration on Medicaid enrollees in eight states: California, Georgia, Michigan, New York, Tennessee, Texas, Virginia, and West Virginia. Medicaid patients comprise over 40 percent of all FQHC patients nationally. In comparison, demonstration FQHCs received quarterly care management fee payments in proportion only to the number of Medicare beneficiaries they served, and the utilization and spending feedback reports provided to demonstration FQHCs covered only their Medicare population. Thus, if the demonstration was successful and led to the development of advanced primary care practices, these effects would likely be experienced by Medicaid patients. Thus, an examination of the demonstration effect on Medicaid patients would help to provide a more complete picture of the impact of the CMS demonstration.

We faced a number of challenges in conducting these analyses. Most notably, despite using AlphaMAX datasets—a data source with an expedited production cycle as compared with MAX files, a significant lag remains between the time data are submitted by states to CMS and the posting of the corresponding AlphaMAX file. As a result, as of the end of August 2015, complete data for the third year of the demonstration were not available for any state. As a result, these analyses cover only two years of the three-year demonstration period.

The methodology used to estimate demonstration effects on Medicaid enrollees paralleled the methodology we used in our Medicare claims analyses. All results reported in this section reflect difference-in-differences analyses that estimate the demonstration effect on a year-by-year basis. For more information on the methods used in our Medicaid claims analysis, see Appendix C.

Impact of the Demonstration on Medicaid Patients

A total of 267,051 patients were included in our Medicaid claims analyses. These patients were attributed to a total of 362 FQHCs in the eight-state sample (133 demonstration sites and 229 comparison sites). Despite having claims data for only two years of the three-year demonstration period, we observed strong effects of the demonstration for three of the four utilization measures we examined (Exhibit 9.6). While both FQHC and non-ED ambulatory visits decreased more for Medicaid patients attributed to demonstration sites than comparison sites during the first demonstration year controlling for baseline differences, both rates were much higher for demonstration patients during the second year of the demonstration. Rates of ED visits decreased more for demonstration patients in both demonstration years relative to comparison patients—suggesting that reducing utilization in the ED setting might have been a strategy prioritized by demonstration FQHCs for Medicaid patients from the very beginning of the demonstration. Similar to findings from our Medicare claims analyses, we found no effect of the demonstration on inpatient admissions during the first two years of the demonstration.

Exhibit 9.6. Demonstration Impact on Measures of Health Care Utilization, Medicaid Cohort

	Demonstration Impact, Visits per 1,000 Persons (SE)	
Measure	**Year 1**	**Year 2**
FQHC visits	**–48.25† (29.10)**	**349.41*** (13.29)**
Non-ED ambulatory visits	**–91.93† (51.96)**	**392.56*** (43.32)**
ED visits	**–82.29*** (22.24)**	**–110.33*** (21.47)**
Inpatient admissions	7.53 (6.19)	2.32 (6.16)

† p<0.10; *** p<0.001. Bold indicates statistically significant results (p<0.10).
NOTE: This analysis uses the rolling entry cohort. The baseline attribution contributes to the demonstration impact in Year 1, whereas both the baseline attribution cohort and the Year 1 attribution cohort contribute to the demonstration impact in Year 2.

The quality of the underlying data raises some concerns regarding the validity of these analyses. First, the completeness of encounter reporting remains a concern. While the completeness of encounter reporting may be improving over time, these analyses use claims that date back to 2009, when data quality is likely to be poorer. Second, unlike CMS certification numbers (CCNs), which are used to identify institutional providers (such as FQHCs) in Medicare claims, National Provider Identifiers (NPIs) are not used in consistent ways by FQHCs. For example, some FQHCs use a single NPI for the entire organization, whereas some FQHCs use NPIs that are specific to each service delivery site. In addition, NPIs may not be as stable over time compared with other clinic identifiers, such as CCNs. Both factors indicate that we might be imperfectly measuring each site's exposure to the demonstration. Third, the extent to which diagnoses are routinely reported on Medicaid claims may vary across FQHCs—particularly since diagnosis code reporting does not impact payment for FQHCs. Thus, we might not be adequately controlling for differences in case mix between demonstration and comparison sites. Finally, although the use of propensity score weights improved balance between demonstration and comparison sites, we were unable to achieve balance on several characteristics at levels that are commonly recommended for assessing the adequacy of covariate balance. While our regression methodology adjusted for residual imbalance, we may not have fully accounted for all differences between demonstration and comparison sites.

These results may not be generalizable, given the small number of FQHCs (362) included in these analyses and the limited number of states. In addition, during the time period covered by this study, the Medicaid eligible population in most states included few or no childless adults. Among the eight states in our sample, only the New York Medicaid program provided coverage for low-income childless adults. Thus, the vast majority of patients included in this analysis were pregnant women and disabled individuals.

9.5. Process Measures Among Medicare Beneficiaries

We estimated the demonstration's impact on claims-based process measures among Medicare beneficiaries, as shown in Exhibit 9.7. The measures were limited to surveillance tests recommended for patients with diabetes (four measures)[58] and ischemic vascular disease (one measure).[59]

We observed greater improvements in diabetes care among demonstration sites than among comparison sites after controlling for baseline differences between demonstration and comparison sites, but the results were inconsistent across measures and over time (Exhibit 9.7). Using a composite measure that encompassed all four diabetes screening tests, we found that demonstration sites provided higher quality of care during the demonstration's first year only (1.4 percentage points higher provision of all four diabetes-related tests) after controlling for baseline differences between demonstration and comparison sites. However, if the four measures are examined individually, demonstration sites had slightly lower rates of HbA1c testing in Year 2 (0.73 percent lower), higher rates of nephropathy screening tests than comparison sites (ranging from 1.1 to 2.1 percentage points higher) across the three demonstration years, and higher rates of retinal eye exams in Year 1 and Year 2 (2.0 percentage points higher in Year 1 and nearly 1 percentage point higher in Year 2) after controlling for baseline differences between demonstration and comparison sites. These findings are consistent with previous evaluations of PCMH demonstrations that have found improvements in process measures in demonstrations lasting three years or less (Friedberg et al., 2014).

As indicated by the qualitative data from site interviews, improvements on clinical quality measures might be attributable to improved use of EHR systems, greater standardization and training on best practices, expanded population health management activities, and more systematic tracking and monitoring of test and diagnostic referrals.

[58] The four diabetes-related process measures included conducting Hba1c, LDL, and nephropathy tests in the past year and completing a retinal eye exam in the past year.

[59] The ischemic vascular disease-related process measure was defined as conducting a lipid test in the past year.

Exhibit 9.7. Year-by-Year Demonstration Impacts on Process Measures

Outcome Measure	Performance in the Year Prior to the Demonstration (percentage points)	Likelihood of Utilization (percentage points)					
		Year 1	p-value	Year 2	p-value	Year 3	p-value
All four recommended tests for patients with diabetes	22.2	**1.39*** **	**<0.001**	0.22	0.561	0.45	0.211
HbA1c test	85.0	0.18	0.639	**–0.73†**	**0.060**	0.54	0.166
LDL test	78.9	0.51	0.307	–0.33	0.467	–0.12	0.784
Eye exam	41.6	**1.97*** **	**<0.001**	**0.91†**	**0.055**	0.46	0.316
Nephropathy test	54.9	**1.57** **	**0.005**	**1.14***	**0.025**	**2.10*** **	**<0.001**
Lipid test for patients with ischemic vascular disease	76.2	–0.24	0.727	–0.76	0.241	–0.57	0.386

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

Cumulative Demonstration Effect on Process

Details regarding the cumulative effect of the demonstration on process (i.e., aggregated across all three demonstration years) are presented in Exhibit 9.8.

We observed statistically significant consistent trends in the cumulative demonstration effect on process measures across all three years relative to the year-by-year analyses. By Year 3, demonstration sites had a significantly higher rate of providing all four diabetes tests (0.8 percentage points) relative to comparison sites. This was largely driven by higher rates of eye exams (1.3 percentage points) and nephropathy tests (1.6) by Year 3 of the demonstration period.

Exhibit 9.8. Cumulative Effect Analysis of Demonstration on Process Measures

	Cumulative Demonstration Effect (percentage points)					
	Year 1		Year 2		Year 3	
Outcome Measure	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
All four recommended tests for patients with diabetes	**1.39*** (0.40)**	**<0.001**	**0.84** (0.32)**	**0.009**	**0.76* (0.29)**	**0.010**
HbA1c test	0.18 (0.39)	0.639	–0.15 (0.34)	0.657	0.16 (0.31)	0.610
LDL–C test	0.51 (0.50)	0.307	0.00 (0.40)	0.997	0.03 (0.36)	0.941
Eye exam	**1.97*** (0.50)**	**<0.001**	**1.50*** (0.41)**	**<0.001**	**1.31*** (0.37)**	**<0.001**
Nephropathy test	**1.57** (0.56)**	**0.005**	**1.37** (0.45)**	**0.002**	**1.60*** (0.40)**	**<0.001**
Lipid test for patients with ischemic vascular disease	–0.24 (0.70)	0.727	–0.46 (0.57)	0.416	–0.42 (0.52)	0.426

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
* p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

9.6. Expenditures for Medicare Beneficiaries

PCMH practices were expected to expand patient access to care, promote greater patient-centered care, and improve care management. These changes, in turn, were expected to improve patients' health and reduce the need for costly hospital care. Thus while outpatient spending might increase as a result of expanded access to primary care, overall expenditures were expected to decrease or increase at a slower rate than expenditures for the comparison FQHCs.

To test this concept, we estimated changes in total Medicare expenditures; the likelihood of spending within specific service categories; and the level of spending among service users as part of total expenditures, and for the seven categories that collectively comprise total expenditures. We also examined categories of spending that we considered to be most sensitive to changes in patterns of care associated with the implementation of the medical home model as shown in Exhibit 9.9.

While we observed different demonstration effects on total expenditures (overall spending) in each of the three years of the demonstration, demonstration sites were associated with significant increases in total Medicare expenditures during Year 3 relative to comparison sites ($p<0.10$). When the fees were included, total Medicare expenditures were significantly higher in demonstration sites ($p<0.05$).

Details regarding the cumulative effect of the demonstration on spending measures (i.e., aggregated across all three demonstration years) are discussed below and presented in Exhibit 9.10.

Exhibit 9.9. Year-by-Year Demonstration Impacts on Spending Measures

Outcome Measure	Spending in the Year Prior to the Demonstration		Demonstration's Impact on Spending (per beneficiary per year)								
			A. Overall Spending (dollars)			B. Likelihood of Any Spending (percentage points)			C. Level of Spending Among Service Users (dollars)		
	Spending per Beneficiary (dollars)	Likelihood of Spending (percentage points)	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Total Medicare expenditures	7,832.1	99.8	35.78	75.49	**162.86†**	–0.39	–0.53	–0.32	62.42	118.73	**206.10***
p-value			0.727	0.404	**0.069**	0.142	0.224	0.527	0.549	0.198	**0.024**
Total Medicare expenditures with care management fees[a]	—	—	107.78	147.49	234.86	—	—	—	—	—	—
Inpatient	3,165.4	18.8	–31.48	80.44	77.56	0.26	**0.69*****	**0.45****	–425.94	–263.90	–59.47
p-value			0.666	0.164	0.147	0.191	**<0.001**	**0.003**	0.231	0.376	0.827
Skilled nursing facility	373.4	2.7	3.29	**47.79***	**48.20***	0.08	**0.37*****	**0.40*****	–263.63	–146.73	–414.23
p-value			0.905	**0.017**	**0.012**	0.456	**<0.001**	**<0.001**	0.674	0.750	0.327
Home health	415.5	8.3	**15.40†**	**26.94*****	**24.01*****	0.19	**0.32****	**0.21***	81.67	**142.65†**	**177.17****
p-value			**0.088**	**<0.001**	**<0.001**	0.144	**0.005**	**0.049**	0.334	**0.056**	**0.010**
Outpatient facility	1,621.0	99.5	**–63.51†**	2.01	20.54	–0.28	0.74	**0.96†**	**–63.87†**	–8.89	6.32
p-value			**0.082**	0.940	0.415	0.475	0.175	**0.080**	**0.096**	0.758	0.820
Hospice	171.7	1.0	11.92	–25.56	**67.70†**	–0.02	–0.17	–0.16	103.75	–1,756.57	**3,989.77†**
p-value			0.667	0.414	**0.064**	0.849	0.214	0.233	0.959	0.359	**0.080**

Part B expenditures[b]	1,769.2	94.2	–2.70	23.49	**61.87*** **	0.26	**0.41***	**0.94*** **	–7.66	19.52	**54.65** **
p-value			0.919	0.263	**<0.001**	0.109	**0.025**	**<0.001**	0.792	0.409	**0.009**
Physicians (primary care)	194.2	60.5	–4.88	7.10	**10.72***	0.10	**0.46***	**0.49***	–8.78	9.12	**15.67†**
p-value			0.548	0.274	**0.041**	0.672	**0.029**	**0.012**	0.507	0.397	**0.072**
Physicians (specialist)	1,021.3	79.6	–3.75	11.95	20.49	0.16	**0.36†**	**0.44***	–7.62	11.12	22.63
p-value			0.846	0.391	0.118	0.402	**0.062**	**0.016**	0.755	0.546	0.204
Durable medical equipment	332.1	34.8	–5.87	–7.01	–3.86	–0.27	0.04	–0.10	–9.63	–22.32	–11.07
p-value			0.540	0.278	0.588	0.120	0.834	0.536	0.714	0.249	0.649
Total outpatient[c]	1,953.1	99.6	–55.81	–3.15	16.08	–0.10	0.66	**0.93†**	–57.68	–14.42	0.38
p-value			0.134	0.910	0.545	0.793	0.205	**0.083**	0.138	0.628	0.989
Laboratory	232.7	84.4	1.70	**6.74** **	**11.32*** **	**1.01*** **	**1.32*** **	**1.16*** **	–1.27	4.05	**10.67*** **
p-value			0.503	**0.002**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.683	0.152	**<0.001**
Imaging	191.5	64.5	–1.50	–0.44	**–0.15**	0.36	**0.72*** **	**0.64** **	–4.17	–3.86	–2.77
p-value			0.549	0.808	0.930	0.133	**<0.001**	**0.001**	0.284	0.191	0.339

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] Care management fees were incorporated as a constant to each yearly difference-in-differences estimate. The magnitude of the constant varied by year and was equivalent to the product of: (1) the number of beneficiaries within the rolling entry cohort who were attributed to demonstration sites and who had at least one month of eligibility in the measurement year and (2) the care management fee of $72/beneficiary/year (i.e., four quarterly care management fees of $18/beneficiary/quarter). We used this approach because each beneficiary's observed value of total Medicare expenditures per year was annualized (i.e., scaled up to account for less than 12 months of continuous eligibility) prior to conducting the difference-in-differences analysis.

[b] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file, including spending on laboratory, imaging, and physician services in ED settings, which are excluded from the primary care physician and specialist physician spending subcategories reported in the subsequent two rows.

[c] This category corresponds to outpatient facility claims and all provider claims for services rendered in outpatient places of service.

When we examined individual categories of spending, we identified several differences between demonstration and comparison sites. In particular, the demonstration was associated with increased spending on home health care, skilled nursing care (Years 2 and 3), hospice care (Year 3 only) and noninstitutional provider services (Year 3 only), relative to the comparison group.[60] The significant increases in the two categories of post–acute care spending (home health and skilled nursing care) may indicate that demonstration sites were increasingly able to secure enhanced levels of care for patients undergoing transitions—a high priority population for a medical home. However, the demonstration was associated with decreased spending in outpatient facilities (Year 1 only).

We found a significant increase in laboratory spending (which serves as one marker of improvements in access to primary care in demonstration sites) among beneficiaries attributed to demonstration sites ($7 per beneficiary in Year 2 and $11 per beneficiary in Year 3). This finding may indicate that demonstration sites expanded their provision of diagnostic testing for beneficiaries who had recently gained greater access to primary care or specialty care through the medical home. Although the qualitative analyses indicated that many FQHCs were unable to systematically track admissions and discharges, other FQHCs have made progress advancing community relations and IT infrastructures that will eventually support better coordination between ambulatory and hospital services. The magnitude of the increases in each spending category was quite small relative to the annual per capita spending for the beneficiary cohort.

Cumulative Effect on Spending

Findings on the cumulative demonstration effect on spending measures closely resembled results from the year-by-year analysis (Exhibit 9.10). We observed a significant increase ($p<0.10$) in total spending by Year 3 of the demonstration ($127 per beneficiary). We also found statistically significant similar findings in two out of three years for skilled nursing facility spending ($47 per beneficiary by Year 3) and across all three years for home health spending ($29 per beneficiary by Year 3). Lastly, we also examined a significant increase in noninstitutional provider spending in Year 3 ($27 per beneficiary).

[60] Noninstitutional provider services correspond to all claims in the Physician/Supplier Part B ("carrier") file including spending on laboratory, imaging, and physician services provided in ED settings, which are excluded from the primary care physician and specialist physician spending subcategories.

Exhibit 9.10. Cumulative Effect Analysis of Demonstration on Spending Measures

	Cumulative Demonstration Effect (dollars per beneficiary)					
	Year 1		Year 2		Year 3	
Outcome Measure	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
Total Medicare spending expenditures without care management fees[a]	35.79 (102.62)	0.727	71.37 (77.82)	0.359	**126.35† (71.07)**	**0.075**
Total Medicare expenditures with care management fees[a]	107.79 (102.62)	0.297	**143.37† (77.82)**	**0.065**	**198.35** ** **(71.07)**	**0.005**
Inpatient	–31.48 (73.04)	0.666	32.76 (51.41)	0.524	49.56 (44.08)	0.261
Skilled nursing facility	3.29 (27.57)	0.905	**44.74* (17.79)**	**0.012**	**46.81** (16.06)**	**0.004**
Home health	**15.40† (9.02)**	**0.088**	**24.87*** (6.75)**	**<0.001**	**29.35*** (5.74)**	**<0.001**
Outpatient facility	**–63.51† (36.47)**	**0.082**	–26.68 (23.36)	0.253	–4.59 (19.60)	0.815
Hospice	11.92 (27.72)	0.667	–16.44 (25.29)	0.516	39.68 (28.78)	0.168
Part B expenditures	–2.70 (26.71)	0.919	17.25 (18.37)	0.348	**36.68* (15.50)**	**0.018**
Physician (primary care)	–4.88 (8.12)	0.548	4.28 (6.39)	0.503	4.99 (5.16)	0.333
Physician (specialist)	–3.75 (19.30)	0.846	7.96 (13.00)	0.540	13.85 (11.15)	0.214
Durable medical equipment	–5.87 (9.57)	0.540	–3.82 (6.11)	0.531	–2.30 (5.55)	0.678
Laboratory[b]	1.70 (2.54)	0.503	**3.99* (1.94)**	**0.040**	**7.25*** (1.77)**	**<0.001**
Imaging[b]	–1.50 (2.50)	0.549	–1.15 (1.67)	0.491	–0.63 (1.43)	0.660
Total outpatient[c]	–55.81 (37.28)	0.134	–24.40 (24.30)	0.315	–4.15 (20.64)	0.841

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] Estimates of total Medicare expenditures inclusive of care management fee payments were calculated by adding a constant equal to the sum of the total care management fee payments for demonstration beneficiaries included in each analysis. These estimates were calculated using the two-part model estimates only and thus appear in the "overall" spending panel only.

[b] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file including spending on laboratory, imaging, and physician services provided in ED settings, which are excluded from the primary care physician and specialist physician spending subcategories that are reported in the subsequent two rows.

[c] This category corresponds to outpatient facility claims and all provider claims for services rendered in outpatient places of service.

9.7. Chapter Summary and Conclusion

Our analysis of Medicare claims data found no effects on Medicare expenditures and limited evidence of demonstration effects on measures of beneficiary utilization and process of care:

- After controlling for baseline differences between Medicare beneficiaries attributed to demonstration and comparison sites, demonstration sites had significantly greater increases in FQHC and primary care visits than did comparison sites. Demonstration sites also showed a steady upward trend in ED visits compared with comparison sites during the three years of the demonstration.
- We observed a small, statistically significant increase in the proportion of beneficiaries attributed to demonstration sites receiving at least one specialty care visit relative to beneficiaries attributed to comparison sites.
- The demonstration had scant effect on inpatient admission rates—both overall or specifically for ACS conditions—and did not affect hospital readmission rates.
- We found some small but significant improvement for diabetes care among demonstration sites compared with comparison sites.
- Demonstration sites were significantly associated with increased total Medicare expenditures during Year 3 and cumulatively when care management fee payments were excluded from the analysis ($p<0.1$). When the fees were included, total Medicare expenditures were significantly higher in demonstration sites ($p<0.05$).
- While we observed different demonstration effects on total expenditures (overall spending) in each of the three years of the demonstration, demonstration sites were associated with significant increases in total Medicare expenditures during Year 3 relative to comparison sites ($p<0.10$). When the fees were included, total Medicare expenditures were significantly higher in demonstration sites ($p<0.05$).
- The demonstration was associated with increased spending relative to comparison sites, on home health care, skilled nursing care, noninstitutional provider services, and laboratory testing.

The demonstration's effects on utilization, processes of care, and expenditures, after controlling for baseline differences were smaller than we had hypothesized prior to the evaluation. We did not see many of the changes in utilization that we had expected to see, such as a decrease in ED use; instead, we observed a small but consistently increasing trend in ED visits over the three years of the demonstration. Nor did we see a decrease in total expenditures, although there were some decreases in individual spending categories.

We will discuss the reasons for these small effects further in Chapter Ten. However, it is useful to note here that the three-year demonstration might not have been long enough to allow us to see the full effect of the demonstration. For example, FQHCs may have had limited ability to improve rates of hospital admissions and readmissions unless they had well-established communications with hospitals and EDs. Effective communication is essential to provide

ambulatory services that might stave off unnecessary hospital admissions and/or readmissions. While these capabilities are part of the NCQA PCMH criteria, many FQHCs indicated that they would require more than three years to develop the required coordination and communication with hospitals and EDs that are needed to support such capabilities.

As discussed in Chapter Two, most demonstration sites that achieved NCQA Level 3 PCMH recognition did so toward the very end of the three-year demonstration. Therefore, it may be premature to expect widespread impacts on beneficiary utilization, processes of care, and Medicare expenditures.

In addition, comparison FQHCs included sites with NCQA Level 3 recognition and other types of PCMH certification as well as FQHCs that may have features of PCMHs but not formally sought PCMH recognition. This blending of PCMH and non-PCMH FQHCs is likely to have blunted any observed demonstration effect.

Our analyses in Chapters Three and Four documented that comparison sites had similar and often equal access to sources of external funding and TA opportunities to become a medical home.[61] The exposure of comparison sites to equivalent opportunities to become a medical home (through supports external to the demonstration) decreased the opportunity to recognize observable differences between demonstration and comparison sites, likely reducing the chance that we would detect significant demonstration effects on beneficiary outcomes.

In Chapter Ten, we will examine the demonstration effect further, this time focusing on patient experience.

[61] While demonstration (but not comparison) FQHCs received care management fee payments, TA specifically directed to the demonstration sites and three types of feedback reports, qualitative analyses and adjusted regression results found in Chapters Three and Four illustrate that comparison sites had equal access to external funding and TA opportunities to become a medical home.

10. Effect of the Demonstration on Patient Experience

A critical characteristic of high-quality care is that it should be "patient-centered." This concept is defined by the Institute of Medicine (2001) as care that is "respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all decisions." One strategy for learning whether health care is patient-centered is simply to ask patients about their experience. We used such an approach by conducting a survey of Medicare beneficiaries attributed to demonstration or comparison FQHCs. The beneficiary surveys covered topics that are important to patients and their caregivers, including aspects of the quality of care patients receive, such as timeliness and access to care, communication skills of providers, customer service by clinicians and staff, and coordination of care.

Survey participants provided data at two points in time, separated by 19 months, allowing us to longitudinally assess changes in care and outcomes for the same person. A total of 17,294 beneficiaries completed the baseline survey, and 10,788 responded to both the baseline (fielded May–October 2013, demonstration months 19–24) and follow-up surveys (fielded September 2014–January 2015, demonstration months 35–39[62]), resulting in a 41-percent response rate at baseline and a 66-percent response rate for the follow-up survey (among beneficiaries who had responded to the baseline survey). We describe the methods associated with the development, fielding, and analysis of the beneficiary survey in Appendix D. Briefly, we use logistic regression for binary items and linear regression for all scale scores. Each analysis incorporated sampling weights, non-response weights, propensity score weights to balance demonstration and comparison groups, site-level clustering, and Huber-White adjusted standard errors. Logistic regression estimates are reported on their natural scales using an estimator developed by Puhani. As with the analyses using claims data, here we sought to understand the effect of the demonstration on changes in beneficiary experiences over time.

Like Chapter Nine, Chapter Ten seeks to answer the question, What is the effect of participating in the demonstration on beneficiary processes and outcomes? The chapter begins with a description of the characteristics of beneficiaries who responded to both the early and late beneficiary surveys, then presents the results of our analyses of beneficiary-reported experience for beneficiaries attributed to demonstration FQHCs versus comparison FQHCs. Additional details regarding analyses of changes over time and of the demonstration effect are shown in Appendix H.

[62] As noted in Appendix D, the fielding of the beneficiary survey was designed to maximize the time between the early and late surveys. All respondents received their follow-up survey 19 months after they received their early beneficiary survey.

10.1. Beneficiary Characteristics

Exhibit 10.1 shows the characteristics of beneficiaries attributed to demonstration or comparison sites who gave valid answers to specific questions on both the baseline and follow-up surveys.

To optimize the number of beneficiary experiences that we were able to study with the available sample, we fielded four different versions of the beneficiary survey. Three-quarters of the survey items were asked across all four survey versions, but the remaining items were asked in only a single survey version (described in Appendix D). As will be shown here, there was substantial variation in the number who responded to different survey items; this is consistent with some survey items being asked across all four survey versions and other items being asked only in one version, and consistent with clinically detailed skip patterns that determine specific cohorts for other survey items.

The sociodemographic characteristics and health status of the cohort of beneficiaries that responded to both the early and late surveys are presented in Exhibit 10.1. There are very few differences in self-reported comorbid characteristics between baseline FQHC and comparison FQHC beneficiaries. Across 33 reported comorbidities, demonstration and comparison FQHC beneficiaries have similar patterns of self-reported comorbidities. At baseline and follow-up, demonstration FQHC beneficiaries were more likely to have any gut comorbidity and stomach ulcers; however, they were less likely to have kidney problems.

As expected, there was very little change in sociodemographic characteristics and little difference in comorbid characteristics between baseline and follow-up, though demonstration FQHC beneficiaries were more likely to be older at baseline and comparison and more likely to be American Indian or Alaskan native at baseline. A more-detailed table with sociodemographic and health status of the survey respondents is presented in Appendix D.

Exhibit 10.1. Survey Respondent Characteristics Associated with the Full Early and Late Beneficiary Survey Cohorts Stratified by Demonstration FQHC and Comparison FQHC

	Early Survey (%) [a]		Late Survey (%) [a]	
	Demonstration FQHC (N=7,948)	Comparison FQHC (N=8,117)	Demonstration FQHC (N=4,953)	Comparison FQHC (N=5,094)
Demographics				
Male (%)	39.02	39.17	**36.84†**	**39.89**
Female (%)	60.98	60.83	**63.16†**	**60.11**
Age 18–24 (%)	**0.23†**	**0.21**	**0.05****	**0.18**
Age 25–34 (%)	**2.35†**	**1.91**	**1.46****	**1.40**
Age 35–44 (%)	**4.47†**	**5.01**	**3.66****	**4.11**
Age 45–54 (%)	**12.80†**	**10.60**	**12.00****	**8.69**
Age 55–64 (%)	**18.36†**	**18.52**	**18.17****	**17.25**
Age 65–75 (%)	**36.09†**	**35.29**	**35.71****	**35.20**
Age 75 or older (%)	**25.70†**	**28.46**	**28.96****	**33.17**
8th grade or less (%)	15.26	16.57	13.48	15.08
Some high school, but did not graduate (%)	16.99	16.96	16.03	16.49
High school graduate or GED (%)	35.44	35.39	36.68	36.11
Some college or two-year degree (%)	22.21	21.83	22.43	22.64
Four-year college graduate (%)	4.42	4.68	5.44	4.46
More than four-year college degree (%)	5.67	4.57	5.94	5.21
Hispanic (%)	16.49	15.35	16.26	14.61
White (%)	71.61	70.55	73.05	71.89
Black or African American (%)	14.17	15.56	12.93	15.26
Asian (%)	2.03	1.61	1.55	1.49
Native Hawaiian or Other Pacific Islander (%)	0.36	0.61	0.25	0.41
American Indian or Alaskan Native (%)	**5.17***	**3.94**	4.69	3.88
Other (%)	6.43	5.74	5.85	5.17
Comorbidity				
Any comorbidity (%)	**92.99†**	**91.65**	91.51	91.84

	Early Survey (%) [a]		Late Survey (%) [a]	
	Demonstration FQHC (N=7,948)	Comparison FQHC (N=8,117)	Demonstration FQHC (N=4,953)	Comparison FQHC (N=5,094)
Any heart comorbidity (%)	67.92	67.49	66.90	68.37
Any kidney comorbidity (%)	20.30	21.43	20.14	22.29
Any lung comorbidity (%)	26.63	26.46	25.26	25.43
Any gut comorbidity (%)	**18.43†**	**16.57**	**18.24***	**15.44**
Any brain comorbidity (%)	25.28	24.94	**24.30†**	**22.02**
Any bone comorbidity (%)	64.38	63.55	62.91	62.46
Any other comorbidity (%)	57.31	58.43	58.49	58.61
Any diabetes (%)	32.84	33.10	32.50	34.50
Eye problems (%)	30.18	30.92	30.77	31.34
Difficulty hearing (%)	21.72	21.96	21.29	21.25
Calculated body mass index (BMI) (mean)	29.77	29.81	29.64	29.63
Calculated BMI—neither overweight or obese (mean)	22.14	22.10	22.28	22.36
Calculated BMI—overweight (mean)	27.41	27.40	27.44	27.48
Calculated BMI—obese (mean)	**36.00*****	**36.55**	**36.22***	**35.84**

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).
NOTE: Analyses are weighted to account for the sampling design and nonresponse.
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] p-values from logistic or linear regression comparing beneficiaries attributed to demonstration versus comparison sites.

We grouped the results of the beneficiary survey analyses into the categories of beneficiary-reported need, utilization, evidence-based processes of care, and beneficiary experiences.

Beneficiary Reported Needs

We note the following beneficiary-reported needs at baseline.

- Eighty-five percent of beneficiaries reported that they had made an appointment for routine care during the previous 12 months
- Seventy-five percent said they saw their provider for a specific illness
- Forty-five percent reported telephoning their provider's office during regular office hours
- One-quarter of beneficiaries reported needing care for themselves during evenings, weekends, or holidays
- More than half of respondents who reported not speaking English well (n=841) also reported needing an interpreter in their provider's office.

Overall, the proportion of beneficiaries reporting a need for health care decreased between the early and late surveys. However, on average, we saw no difference between the demonstration and comparison groups over time regarding the need for health care.

10.2. Beneficiary Reported Experiences

Analyses of survey data from the longitudinal cohort of beneficiaries who responded to both the early and the late survey are presented in tabular format in Exhibits 10.2–10.6. Survey analyses used logistic regression for binary items and linear regression for scale scores. Each analysis incorporated sampling weights, non-response weights, propensity score weights to balance demonstration and comparison groups, site-level clustering, and Huber-White adjusted standard errors. Logistic regression estimates are reported on their natural scales using an estimator developed by Puhani. For each category of results, we focus on whether, over time, the changes seen in the demonstration group reports differed from those in the comparison group reports ("difference-in-differences"). The p-value shown is from multivariable linear regression adjusting for baseline beneficiary- and site-level covariates. We also identified changes over time in patient experience as reported by beneficiaries overall (regardless of whether they were in both demonstration and comparison groups (results shown in Appendix H).

Loyalty, Timeliness, and Access

Exhibit 10.2 shows results for loyalty, timeliness, and access. Survey items addressing loyalty issues focused on whether the FQHC provider fulfilled key roles for the beneficiary (provided a check-up, gave advice about health problems, saw the beneficiary when sick or hurt) and whether beneficiaries were able to see their personal doctor or nurse at the provider's office. On loyalty issues, we found no significant differences between demonstration and comparison sites over time.

After adjusting for baseline differences, the demonstration was associated with more improvements in timely care in two domains relative to comparison sites: a statistically significant increase of eight percentage points in the probability that beneficiaries would receive answers to their medical questions on the same day (p=0.013); and an increase of five percentage points in the probability that beneficiaries would receive an appointment as soon as needed (p=0.075). Despite these changes, there was no significant demonstration effect with regard to getting timely appointments, care, and information from the early to the later survey.[63]

[63] Throughout this chapter, we present Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS) scale results in aggregate. However, in this example, and throughout this chapter, we highlight the demonstration effect associated with components of the scale when this information is likely to help readers formulate an idea of how beneficiary experiences change over time. While CAHPS scales have been extensively tested across multiple patient populations, they have not been applied to a nationally representative

Exhibit 10.2. Loyalty/Continuity, Timeliness, and Access—Demonstration Effect

Survey Item[a]	Total N Unweighted[b]	Demo Difference-in-Differences Estimate[c]	p-value
Loyalty/Continuity			
This provider has been the one fulfilling my main provider roles [d]	7,973	-0.013	0.530
Do you have a personal doctor or nurse at the clinic named in the survey?	1,833	0.008	0.842
At your personal provider, *usually or always* saw personal doctor or nurse (not another provider from the office)	1,008	0.035	0.370
At your personal provider, *always* saw personal doctor or nurse (not another provider from the office)	1,008	-0.001	0.983
Timeliness and access			
Timeliness			
In the last 12 months, did you phone this provider's office with a medical question after regular office hours?	6,363	0.002	0.906
Usually or always in the last 12 months, when you phoned this provider's office during regular office hours, get an answer to your medical question that same day	1,843	**0.082***	**0.013**
Usually or always get appointment as soon as needed for check-up or *routine* care	4,092	0.001	0.944
When phoning this provider's office *after* regular office hours, *usually or always* got answers to questions as soon as you needed	174	0.054	0.723
When you phoned this provider's office for care you needed right away, *usually or always* got an appointment as soon as needed	2,154	**0.046†**	**0.075**
Usually or always saw this provider within 15 minutes of your appointment time	6,460	0.003	0.896
CG-CAHPS: Getting timely appointments, care, and information scales	6,749	-0.194	0.815
Access			
Usually had to wait four or more days for an appointment when you needed care right away	2,107	0.008	0.809
Usually have to wait more than seven days for an appointment when you needed care right away	2,107	0.001	0.949
Usually or always able to get the care you needed from this provider's office during evenings, weekends, or holidays	800	0.001	0.990
Never able to get the care you needed from this provider's office during evenings, weekends, or holidays	800	0.052	0.379
PCMH CAHPS: Access to care scale (2 validation items)	2,699	-1.374	0.443
Access to care with information-sharing			

population with characteristics similar to the Medicare beneficiaries in this demonstration. Our item-level data can contribute to an understanding of both a temporal and demonstration effect on beneficiary experiences.

Survey Item[a]	Total N Unweighted[b]	Demo Difference-in-Differences Estimate[c]	p-value
Did this provider's office give you information about what to do if you needed care during evenings, weekends, or holidays?	6,509	-0.019	0.385
In the last 12 months, did you get any reminders from this provider's office between visits?	6,434	-0.020	0.405
PCMH CAHPS: Information about care and appointments scale	6,817	-2.160	0.204
Access to specialists among those who tried to make an appointment with a specialist			
Usually or always easy to get an appointment	742	0.053	0.157

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] See Appendix D for details on the measures, including items included in the scales.
[b] Sample size for each survey question (i.e., for each row in the table) varies based on survey version. The beneficiary survey had four versions. Across these versions, 75 percent of items were repeated across each survey version. However, the noncore questions varied, so only 25 percent of the sample had the option to complete the version-specific questions. Additionally, row-specific sample sizes vary because of clinically detailed skip patterns that varied the cohort for survey questions. Finally, these analyses include survey responses from beneficiaries who report data at two points in time.
[c] p-values from multivariable logistic or linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the demonstration and comparison groups. Estimate presented is the interaction between demonstration and time.
[d] The survey noted the name/address of the provider from the most recent visit for the beneficiary at his or her attributed clinic. The survey uses "this provider" to refer to the provider the respondent saw on the most recent visit to the clinic or practice.

Evidence-Based Care

Results for evidence-based care are shown in Exhibit 10.3. On average, evidence-based care improved over time. However, the demonstration was associated with only one significant effect: a relative increase in the demonstration group relative to the comparison group in the proportion of beneficiaries who indicated that their provider usually or always advised them to quit smoking (p=0.008).

We did not see a significant demonstration effect in the following areas:

- immunizations
- use of or counseling about aspirin to prevent heart attacks or stroke
- receipt of colorectal cancer screening
- additional smoking cessation interventions
- three weight loss interventions (weight loss, exercising regularly, eating right), mental health assessments (measured with the CAHPS PCMH "providers pay attention to your mental or emotional health" scale)
- providers paying attention to mental and emotional health
- mean explicit process scores (which are defined as the percentage of care measures received out of total eligible procedures, adjusted for number of measures that apply to each person).

Exhibit 10.3. Evidence-Based Care—Demonstration Effect

Survey Item [a]	Total N Unweighted[b]	Demo Difference-in-Differences Estimate [c]	p-value
Evidence-based care			
Immunizations			
Received influenza vaccine this season	2,327	-0.018	0.484
Received pneumonia vaccine ever	2,234	0.026	0.330
Received shingles vaccine ever	2,273	0.011	0.670
All three: influenza, pneumonia, shingles	2,360	0.020	0.448
All three among ages 65–85 years	1,162	0.036	0.380
Pneumonia among ages 65–85 years	1,067	0.044	0.209
Aspirin use for prevention of cardiovascular disease			
Doctor or health provider ever discussed with you the risks and benefits of aspirin to prevent heart attack or stroke	2,279	0.026	0.372
Use aspirin *or* discussed risks	2,291	0.034	0.206
Use aspirin or discussed risks among those with heart disease, stroke or diabetes	1,672	0.011	0.716
Colorectal cancer screening			
Had blood stool within one year or colonoscopy within ten years	1,201	-0.065	0.188
Had blood stool within two years or colonoscopy within ten years	1,201	-0.047	0.342
Had blood stool within one year, colonoscopy within ten years, or sigmoidoscopy within five years	1,204	-0.069	0.163
Smoking cessation counseling			
Provider *usually or always* advised you to quit smoking	374	**0.187****	**0.008**
Provider *usually or always* recommended or discussed medication to assist you with quitting smoking	371	0.071	0.437
Provider *usually or always* discussed or provided methods and strategies other than medication to assist you with quitting smoking	371	0.028	0.729
Received *three of three* smoking cessation interventions	375	0.084	0.305
Provider discussions of weight loss, exercise, diet			
Discussed weight loss	1,643	-0.004	0.932
Discussed exercising regularly	1,663	-0.034	0.497
Discussed eating right	1,654	-0.007	0.884

Survey Item [a]	Total N Unweighted[b]	Demo Difference-in-Differences Estimate [c]	p-value
Discussed *three of three* weight loss interventions	1,724	-0.038	0.326
Providers paying attention to mental and emotional health			
Provider asked if there was a period of time when patient felt sad, empty, or depressed?	6,486	0.011	0.629
Among patients with moderate or severe mental health concerns, provider asked if there was a period of time when patient felt sad, empty, or depressed?	919	-0.011	0.863
For full cohort—three out of three mental health items discussed	6,564	0.017	0.407
Among those with moderate or severe mental health problems, three out of three mental health items discussed	926	0.027	0.653
CAHPS PCMH: Providers pay attention to your mental or emotional health scale	6,564	0.740	0.609
Among those with moderate or severe mental health problems, CAHPS PCMH: Providers pay attention to your mental or emotional health scale[d]	1,588	3.281	0.395
Explicit process score			
Explicit process score	7,432	0.975	0.479

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] See Appendix D for details on the measures, including items included in the scales.
[b] Sample size for each survey question (i.e., for each row in the table) varies based on survey version. The beneficiary survey had four versions. Across these versions, 75 percent of items were core items that were repeated across each survey version. However, the noncore questions varied so only 25 percent of the sample had the option to complete the version-specific questions. Additionally, row-specific sample sizes vary because of clinically detailed skip patterns that varied the cohort for survey questions. Finally, these analyses include survey responses from beneficiaries who report data at two points in time.
[c] p-values from multivariable logistic or linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the demonstration and comparison groups. Estimate presented is the interaction between demonstration and time.
[d] The Four-Item Patient Health Questionnaire for Anxiety and Depression (PHQ-4) total score ranges from 0 to 12, with categories of psychological distress being categorized as: none (0-2), mild (3–5), moderate (6–8), severe (9–12) (Kroenke et al., 2009).

Beneficiary Reported Experiences

Results for beneficiary-reported experiences are shown in Exhibit 10.4. We saw no statistically significant demonstration effects on beneficiary ratings of providers or their report of clerks and receptionists. Attribution to a demonstration FQHC was associated with a statistically significant decrease in their beneficiaries' reporting that providers usually or always gave easy to understand information about health questions or concerns (p=0.038), and that providers usually or always explained things in a way that was easy to understand (p=0.004).

We did not see a significant demonstration effect for engaging beneficiaries in effective participation in decisionmaking about medications, providers supporting beneficiaries in taking care of their own health, or provider communication or discussions with beneficiaries about costs of care.

Exhibit 10.4. Beneficiary-Reported Experiences—Demonstration Effect

Survey Item [a]	Total N Unweighted[b]	Demo Difference-in-Differences Estimate [c]	p-value
Beneficiary experience ratings and reports			
Beneficiary ratings of providers			
Rated primary care provider ≥7 on 10-point scale	6,396	0.006	0.688
Rated specialist ≥7 on 10-point scale	742	0.026	0.536
Rated primary care provider 10 on 10-point scale	6,396	0.009	0.705
Rated specialist 10 on 10-point scale	742	0.020	0.794
Beneficiary ratings of clerks/receptionists			
Clerks and receptionists *always* treated you with courtesy and respect	6,598	-0.029	0.125
Clerks and receptionists were *always* as helpful as you thought they should be	6,561	0.002	0.920
CG CAHPS: Helpful, courteous and respectful office staff scale	6,692	-0.371	0.628
Providers support beneficiaries			
Effective participation in decisionmaking about medications			
CAHPS PCMH: Providers discuss medication decision scale	2,456	1.068	0.592
CAHPS Health Literacy: Disease self-management scale	3,820	-1.781	0.192
Provider supports beneficiaries in taking care of their own health			
Anyone in this provider's office talked with you about specific goals for your health	6,400	-0.015	0.568
Anyone in this provider's office asked if there were things that make it hard for you to take care of your health	6,367	0.036	0.151
CAHPS PCMH: Providers support you in taking care of your own health scale	6,515	1.144	0.520
Provider communication			
Provider talked with you about any health questions or concerns	6,409	0.016	0.413
Provider *usually or always* showed respect for what you had to say?	6,621	-0.021	0.104
Provider *usually or always* spent enough time with you	6,411	0.002	0.866

Survey Item [a]	Total N Unweighted[b]	Demo Difference-in-Differences Estimate [c]	p-value
Provider *usually or always* listened carefully to you	6,591	-0.005	0.687
Provider *usually or always* gave you easy to understand information about these health questions or concerns	4,273	**-0.039***	**0.038**
Provider *usually or always* seemed to know the important information about your medical history	6,580	-0.009	0.562
Provider *usually or always* explained things in a way that was easy to understand	6,559	**-0.036****	**0.004**
CG-CAHPS: How well providers communicate with patients scale	6,828	-0.612	0.415
Provider discussions with beneficiaries about costs of care			
Did you and this provider talk about the cost of seeing a specialist?	1,012	0.062	0.256
Were you ever worried or concerned about the cost of seeing a specialist?	1,011	0.018	0.730
CAHPS cost of seeing a specialist scale	1,032	3.981	0.269
Provider follow-up to ordered tests			
When this provider ordered a blood test, x-ray, or other test for you, someone from this provider's office *usually or always* follow up to give you those results	4,796	0.003	0.874
CG-CAHPS: Follow-up on test results scale	4,796	-0.487	0.764

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] See Appendix D for details on the measures, including items included in the scales.
[b] Sample size for each survey question (i.e., for each row in the table) varies based on survey version. The beneficiary survey had four versions. Across these versions, 75 percent of items were core items that were repeated across each survey version. However, the noncore questions varied so only 25 percent of the sample had the option to complete the version-specific questions. Additionally, row-specific sample sizes vary because of clinically detailed skip patterns that varied the cohort for survey questions. Finally, these analyses include survey responses from beneficiaries who report data at two points in time.
[c] p-values from multivariable logistic or linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the demonstration and comparison groups. Estimate presented is the interaction between demonstration and time.

Coordination of Care and Ancillary Services

Results for coordination of care and ancillary services are shown in Exhibit 10.5. We did not see significant demonstration effects in any of the following areas: coordination of care, coordination between providers, coordination with specialists, ancillary transportation services, ancillary home health services, or cultural competence.

Exhibit 10.5. Coordination of Care—Demonstration Effect

Survey Item[a]	Total N Unweighted[b]	Demo Difference-in-Differences Estimate [c]	p-value
Coordination of care			
Coordination in the perihospital period			
Saw a doctor, nurse, or other person from this provider's office during most recent hospital stay[d]	615	0.087	0.339
After most recent hospital stay, provider seemed to know the important information about this hospital stay[d]	612	-0.073	0.335
Within two weeks after hospitalization, visited their provider regardless of call from this provider[d]	619	-0.094	0.272
Coordination between providers			
Provider named in the survey *always* seemed informed and up-to-date about the care beneficiary got from specialists [e]	2,848	-0.009	0.814
Beneficiary and anyone in this provider's office talked at each visit about all the prescription medicines taken	5,646	0.006	0.747
CAHPS PCMH: Attention to care from other providers scale	5,913	9.398	0.955
Coordination with specialists			
Specialists beneficiary saw *always* seemed to know the important information about beneficiary's medical history	761	-0.100	0.168
Ancillary services			
Ancillary transportation services			
In the last three months, beneficiary needed help with transportation to visits at provider's office[d]	1,960	-0.022	0.383
Among the 10 percent who needed help with transportation, this provider's office helped with transportation[d]	264	0.037	0.711
Ancillary home health services			
Beneficiary needed home health services to manage a health condition[d]	1,975	0.004	0.901
Anyone in this provider's office asked if beneficiary needed more services at home to manage health conditions [d]	1,979	0.036	0.271
Anyone in this provider's office helped beneficiary get services needed at home to manage health condition [d]	359	0.032	0.784
PPIC: Access to home services scale[d]	1,638	2.940	0.233
Cultural competence			
Never treated unfairly because you did not speak English very well	856	0.048	0.385

Never or sometimes treated unfairly at this provider's office because of your race or ethnicity	6,419	-0.003	0.702

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] See Appendix D for details on the measures, including items included in the scales.
[b] Sample size for each survey question (i.e., for each row in the table) varies based on survey version. The beneficiary survey had four versions. Across these versions, 75 percent of items were core items that were repeated across each survey version. However, the noncore questions varied so only 25 percent of the sample had the option to complete the version-specific questions. Additionally, row-specific sample sizes vary because of clinically detailed skip patterns that varied the cohort for survey questions. Finally, these analyses include survey responses from beneficiaries who report data at two points in time.
[c] p-values from multivariable logistic or linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the demonstration and comparison groups. Estimate presented is the interaction between demonstration and time.
[d] Based on cohort-level analyses. Person-level analyses include only those with valid responses at both baseline and follow-up. Because these restrict the sample size and interpretation of the results, for some variables we also conducted "cohort-level" analyses, including those with a valid response at either baseline or follow-up.
[e] The survey noted the name/address of the provider from the most recent visit for the beneficiary at their attributed clinic. The survey uses "this provider" to refer to the provider the respondent saw on the most recent visit to the clinic or practice.

Outcomes: Health Status

Changes in health status are shown in Exhibit 10.6. Beneficiary mental and physical health, measured with the Short Form (SF) SF-12 Physical Component Score (PCS) and Mental Component Score (MCS), were two of our primary outcomes. We did not observe a significant demonstration effect on mental or physical health scores.

Exhibit 10.6. Health Status—Demonstration Effect

Survey Item	Total N Unweighted[a]	Demo Difference-in Differences Estimate[b]	p-value
SF–12 Mental Health[c]	9,616	-0.431	0.137
SF–12 Physical Health[c]	9,616	0.285	0.296

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).
[a] Sample size for each survey question (i.e., for each row in the table) varies based on survey version. The beneficiary survey had four versions. Across these versions, 75 percent of items were core items that were repeated across each survey version. However, the noncore questions varied so only 25 percent of the sample had the option to complete the version-specific questions. Additionally, row-specific sample sizes vary because of clinically detailed skip patterns that varied the cohort for survey questions. Finally, these analyses include survey responses from beneficiaries who report data at two points in time.
[b] p-values from multivariable logistic or linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the demonstration and comparison groups. Estimate presented is the interaction between demonstration and time.
[c] For the SF SF-12 PCS and MCS, missing data were imputed via multiple imputation (n=5). All SF-12 analyses account for imputation.

10.3. Chapter Summary and Conclusion

We found few significant differences between demonstration and comparison FQHCs in relation to beneficiary experiences over time.

- In some areas, demonstration beneficiaries experienced improved performance over time relative to comparison beneficiaries. Beneficiaries attributed to demonstration FQHCs were more likely to report:
  - receiving timely answers to medical questions phoned in during regular office hours
  - getting appointments as soon as needed for care needed right away
  - receiving provider advise to quit smoking
- In some areas, demonstration beneficiaries experienced worse performance relative to comparison beneficiaries. Beneficiaries attributed to demonstration FQHCs were less likely to report:
  - receiving easy-to-understand information from the provider about health concerns
  - providers explaining things in a way that was easy to understand

We wanted to understand better the reasons for the lack of a strong observable demonstration effect. To explore these issues further, we undertook the mediation analyses reported in Chapter Eleven. These analyses sought to understand what role, if any, NCQA Level 3 PCMH recognition had on the outcomes seen for beneficiaries attributed to demonstration FQHCs, and whether there were other factors associated with demonstration sites (which might include

participation in other initiatives, use of new payment models, or access to new decision support systems) that might be affecting beneficiary process of care and outcomes.

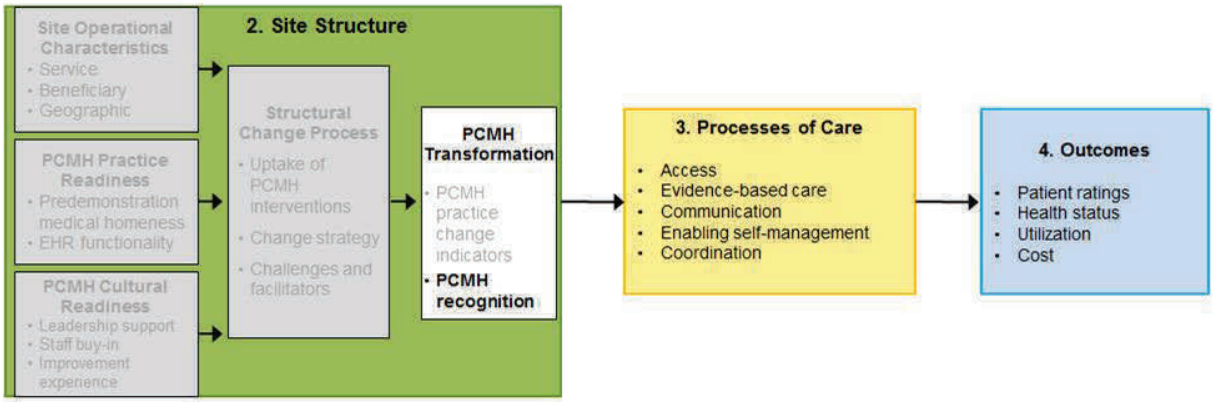
11. The Relationship Between Medical Home Recognition and Changes in Beneficiary Processes and Outcomes

In Chapters Nine and Ten, we showed that the demonstration had only a limited number of effects on beneficiary utilization, process, spending, and patient experience. These results were unexpected, since we had hypothesized that achieving NCQA Level 3 PCMH recognition would contribute to a "quality-of-care cascade," leading to positive and observable changes in beneficiary outcomes (Exhibit 11.1). Much has been written about how medical home recognition could provide support for a team-based approach that would improve beneficiary outcomes. (See Appendix A1.) That body of work provided a theoretical framework suggesting that medical home recognition could improve beneficiary outcomes in a manner consistent with CMS's goals of better access, better process, and lower costs.

The evaluation team considered why we had not observed the demonstration effects that we had expected to see. One possibility was that implementing the medical home model among FQHCs was not associated with significant improvements in beneficiary outcomes. Another possibility was that the effects of medical home recognition were "hidden" due to other factors associated with being part of the demonstration or with being a medical home. In other words, we considered the possibility that FQHCs were engaged in other activities that diminished, or in some cases cancelled out, the positive effects of achieving medical home recognition on beneficiary outcomes.

To understand these issues better, we conducted a set of analyses to determine whether achieving NCQA Level 3 PCMH recognition had an effect on beneficiary outcomes among demonstration sites. These analyses are different from those presented in the previous two chapters in an important way. In Chapters Nine and Ten, we asked the question, *What is the effect of participating in the demonstration on beneficiary outcomes?* In this chapter, we ask, *What is the effect of achieving NCQA Level 3 PCMH recognition on beneficiary outcomes among sites participating in the demonstration?* In other words, we were seeking to understand how NCQA Level 3 recognition influenced—or mediated—the effects of the demonstration. We were also interested in understanding whether other factors were influencing those results.

Exhibit 11.1. Conceptual Model of Factors Affecting Attainment of PCMH Recognition



NOTE: Some portions of the figure are deliberately grayed out to highlight the role of PCMH recognition in the analyses reported in this chapter.

We examined these issues by using an approach known as "mediation analysis." Mediation analysis seeks to understand the nature and mechanisms through which an intervention such as the FQHC APCP Demonstration exerts its effects on a measured outcome (Baron and Kenny, 1986; Jo, 2008; Imai, Keele, and Tingley, 2010). We used mediation analysis to examine whether the demonstration affected beneficiary outcomes through medical home recognition or, alternatively, due to other causes associated with demonstration sites. We will explain this concept further in Section 11.1.

After describing our general approach to mediation analysis, we present the results of our mediation analyses on utilization, process, spending, and patient experience outcomes. The first three of these analyses used claims data, while the beneficiary experience analyses used data from beneficiary survey reports. Appendix K shows additional analyses examining the mediating effect of either NCQA Level 3 PCMH recognition or alternate forms of PCMH recognition (AAAHC, Joint Commission, and state-based recognition). Appendix K also provides analyses using beneficiary-reported process measures, rather than NCQA Level 3 PCMH recognition, as mediators. Appendix L shows beneficiary survey results using alternate forms of PCMH recognition as the mediator.

11.1. Approach to Mediation Analysis

The FQHC APCP Demonstration was designed to stimulate the adoption of the PCMH model by providing care management fee payments, TA, and feedback reports to demonstration FQHCs to support practice transformation. In response, 70 percent of demonstration (compared with 11 percent of comparison) FQHCs achieved NCQA Level 3 PCMH recognition. Demonstration FQHCs expended additional financial, professional, and staff efforts to achieve recognition within the three-year demonstration window.

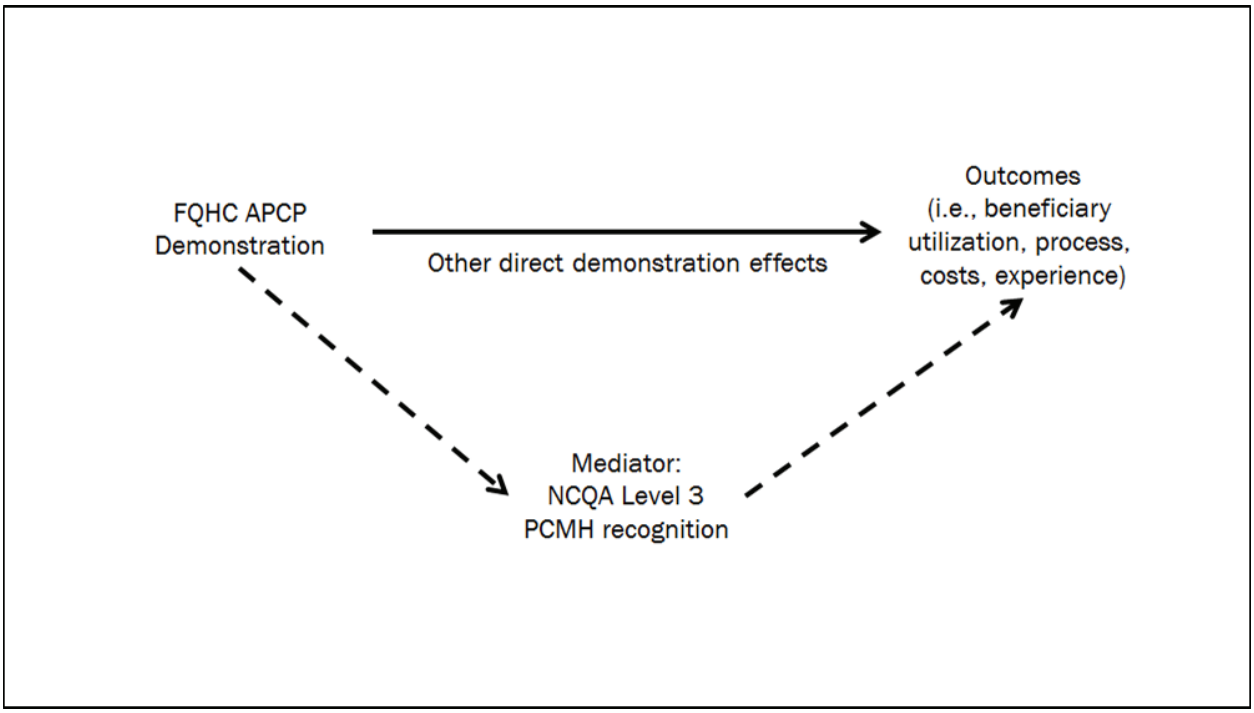
In Chapter Six, we described how demonstration sites took many different pathways to achieve medical home recognition. We hypothesized that, in a similar way, FQHCs might take various pathways to improve beneficiary care and outcomes. We knew from our qualitative interviews, as described in Chapters Three and Four, that both demonstration and comparison FQHCs addressed other important requirements and took advantage of opportunities to improve beneficiary care and outcomes. Both demonstration and comparison sites had access to financial and organizational support from HRSA, the ARRA, the ONC, and state Medicaid agencies. During the demonstration period, ACOs and other new payment models were developed and tested. Increasing access to technology to improve care processes was encouraged by a host of stakeholders through mechanisms such as EHR systems, decision support mechanisms, and registries. All of these programs aimed to improve beneficiary care and outcomes, consistent with PCMH attributes and CMS's triple aim of better care, better health, and lower costs.

We hypothesized that some FQHCs would rely chiefly upon medical home recognition to achieve desired changes in beneficiary outcomes, while other FQHCs would utilize other strategies to improve beneficiary outcomes, and some would use a combination of strategies. Building upon these hypotheses, we explored the notion that demonstration FQHCs might improve—or worsen—beneficiary outcomes in ways beyond those mediated by the adoption of the PCMH model and medical home recognition.

In the analyses presented in this chapter, we explored the hypothesis that the demonstration changed beneficiary utilization, processes, spending, and patient experiences in the third year of the demonstration through pathways *mediated by medical home recognition of the attributed FQHC*, and/or *through a variety of other direct mechanisms* that, in aggregate, could affect beneficiary outcomes in the same manner as recognition does, or alternatively in an opposite manner (Exhibit 11.2). The medical home mediated demonstration effect is indicated by dashed lines in Exhibit 11.2. Other direct effects are represented by the solid line.

We focused on the third year of the demonstration because the software used to conduct the mediation analysis would not allow us to conduct the analyses with several repeated years of observations and estimate the mediated effect in each year in one single model. We focused on the final year of the demonstration because the demonstration effect, though small, was largest in this year.

Exhibit 11.2. Demonstration Effects Estimated in RAND's Mediation Analysis



For all mediation analyses, we estimated three terms:

- The medical home recognition *mediated demonstration effect* is the effect of the demonstration on outcomes mediated by achievement of PCMH recognition.[64]
- The *other direct demonstration effect* captures the remaining association between the demonstration and beneficiary outcomes beyond those captured by recognition. This "other" variable includes unidentified effects that occur through unknown structures or other pathways, as well as a direct effect of the demonstration on the different outcomes, if they exist.
- The total mediated effect is the sum of the previous two effects.

All claims analyses presented in this chapter compare Year 3 claims data for demonstration and comparison sites, controlling for baseline data. The results were stratified by the year during which the FQHC achieved NCQA Level 3 PCMH recognition (i.e., during Year 1, 2, or 3 of the demonstration). We present data stratified by each of the three years since we hypothesized that the effect of the demonstration that is mediated by NCQA Level 3 PCMH recognition would depend highly on the proportion of demonstration sites that were recognized—a proportion that grew over time.

[64] Barron and Kenny (1986) refer to this type of effect as the "indirect effect."

11.2. Mediated Demonstration Effect on Utilization Measures

We hypothesized that the demonstration's impact in increasing medical home recognition would lead to a corresponding increase in ambulatory visits, and we found moderate evidence that the demonstration affected utilization rates of FQHC visits through the achievement of NCQA Level 3 PCMH recognition (Exhibit 11.3). Achievement of Level 3 recognition in Year 3 mediated an increase of 122 FQHC visits per 1,000 beneficiaries among demonstration sites relative to comparison sites.

We examined whether other factors beyond NCQA Level 3 PCMH recognition might also have an effect on the number of FQHC visits per 1,000 beneficiaries among demonstration sites relative to comparison sites. We hypothesized that participation in several initiatives aimed at improving FQHCs, such as care coordination, QI initiatives, and public health programs, might also effect a change in the number of FQHC visits per beneficiary, independently of medical home recognition—that is, not mediated through medical home recognition.

We found that other direct effects (other than NCQA Level 3 PCMH recognition) were associated with respective increases of 249 and 230 FQHC visits per 1,000 beneficiaries among demonstration sites relative to comparison sites (Exhibit 11.3). The mediated effect (i.e., the effect due to NCQA Level 3 PCMH recognition) was equivalent to or even weaker than the other direct effects in Years 1 and 2, but in Year 3, the mediated effect was stronger. This suggested that demonstration sites aggressively expanded access to FQHC visits on average, regardless of whether sites achieved PCMH recognition. This finding supports the notion that, even beyond PCMH recognition, other factors expanded FQHC visits on average, likely with the common goal of improving beneficiary access.

We anticipated that mediated demonstration effect results would be most notable in Year 3 since with the passage of time, a greater proportion of FQHCs achieved recognition. Our mediation analyses confirmed this by showing statistically significant mediated demonstration effects for FQHC visits in Year 3 of the demonstration. We also noted that a significant decrease in non-FQHC primary care physician visits among demonstration sites was mediated by Level 3 PCMH recognition (with an effect size of 51 fewer visits per 1,000 beneficiaries attributed to demonstration sites relative to comparison sites) as compared with other factors (with an effect size of 15 fewer visits per 1,000 beneficiaries). One might expect to see reductions in visits to non-FQHC primary care physicians if medical homes were able to provide greater access and continuity of care for their patients.

Exhibit 11.3. Three Mediated Effects of the Demonstration on Year 3 Beneficiary Utilization Using NCQA Level 3 PCMH Recognition as the Mediator

Outcome Measure[a]	Recognition Achievement Year	Mediated Demonstration Effect (visits per 1,000 beneficiaries)			Direct Demonstration Effect (visits per 1,000 beneficiaries)			Total Demonstration Effect (visits per 1,000 beneficiaries)		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
FQHC visits	1	14.96	(–12.46, 53.41)	0.280	**249.13*** **	**(125.19, 384.35)**	**<0.001**	**264.08*** **	**(131.26, 406.17)**	**<0.001**
	2	**15.31†**	**(–1.71, 43.47)**	**0.072**	**229.55*** **	**(107.43, 363.89)**	**<0.001**	**244.87*** **	**(120.63, 378.20)**	**<0.001**
	3	**122.19****	**(34.19, 208.52)**	**0.008**	114.50	(–39.39, 270.47)	0.148	**236.68*** **	**(112.85, 369.58)**	**<0.001**
Non-FQHC PCP visits	1	0.88	(–4.72, 7.61)	0.780	**–69.98***	**(–129.51, –9.43)**	**0.028**	**–69.10***	**(–127.75, –6.39)**	**0.030**
	2	**–6.53†**	**(–17.00, 0.96)**	**0.088**	**–62.38***	**(–122.62, –0.64)**	**0.048**	**–68.91***	**(–128.91, –6.01)**	**0.038**
	3	**–50.77***	**(–90.09, –9.39)**	**0.010**	–14.90	(–88.52, 61.00)	0.688	**–65.68***	**(–124.44, –2.05)**	**0.046**
PCP visits	1	10.07	(–10.79, 36.89)	0.326	**98.75***	**(10.75, 191.29)**	**0.024**	**108.82***	**(11.23, 201.40)**	**0.026**
	2	3.88	(–7.60,17.12)	0.470	**91.84***	**(7.44, 176.80)**	**0.034**	**95.72***	**(15.69, 180.03)**	**0.024**
	3	41.01	(–16.47, 95.52)	0.164	54.34	(–48.37, 155.41)	0.308	**95.35***	**(8.51,178.22)**	**0.030**
Total ED visits	1	–1.58	(–6.80, 2.10)	0.378	–5.52	(–36.46, 23.19)	0.774	–7.10	(–38.45, 20.58)	0.700
	2	–0.58	(–5.37, 3.55)	0.784	–4.92	(–36.23, 24.41)	0.788	–5.50	(–36.25, 23.28)	0.772
	3	3.13	(–17.58, 22.34)	0.748	–8.71	(–44.83, 26.82)	0.660	–5.58	(–35.58, 22.72)	0.764
Specialist visits	1	–0.54	(–11.05, 10.35)	0.860	–78.19	(–173.93, 23.33)	0.140	–78.73	(–174.77, 24.82)	0.134
	2	4.34	(–8.95, 19.98	0.472	**–80.60†**	**(–182.40, 14.47)**	**0.094**	–76.26	(–176.95, 18.10)	0.112
	3	–3.35	(–64.96, 64.04)	0.930	–74.15	(–191.97, 46.88)	0.226	–77.50	(–171.97, 23.49)	0.142
Outpatient-only ED visits	1	–1.87	(–7.92, 2.06)	0.346	–7.62	(–36.75, 22.48)	0.620	–9.49	(–38.97, 20.76)	0.528
	2	–0.85	(–5.49, 3.02)	0.666	–6.43	(–36.11, 21.48)	0.706	–7.28	(–36.46, 20.03)	0.666
	3	3.72	(–17.07, 22.91)	0.710	–11.40	(–46.64, 24.51)	0.514	–7.68	(–35.72, 23.38)	0.588
Inpatient admissions	1	0.44	(–0.57, 1.89)	0.366	1.67	(–5.05, 8.48)	0.644	2.11	(–4.90, 9.13)	0.544
	2	–0.03	(–0.95, 0.91)	0.950	1.67	(–5.05, 8.62)	0.636	1.65	(–4.91, 8.42)	0.640
	3	–0.76	(–5.01, 3.93)	0.752	2.44	(–5.73, 10.80)	0.570	1.67	(–5.03, 8.60)	0.646
ACSC admissions	1	0.12	(–0.16, 0.61)	0.420	–1.08	(–3.35, 1.25)	0.374	–0.95	(–3.22, 1.35)	0.410
	2	–0.14	(–0.46, 0.13)	0.292	–0.88	(–3.03, 1.38)	0.446	–1.02	(–3.13, 1.25)	0.370
	3	0.46	(–0.89, 1.90)	0.554	–1.46	(-4.10, 1.18)	0.274	–1.01	(–3.11, 1.24)	0.360

Outcome Measure[a]	Recognition Achievement Year	Mediated Demonstration Effect (visits per 1,000 beneficiaries)			Direct Demonstration Effect (visits per 1,000 beneficiaries)			Total Demonstration Effect (visits per 1,000 beneficiaries)		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
Inpatient readmissions (percentage points)	1	0.02	(-0.15, 0.23)	0.854	**1.86†**	**(-0.05, 3.67)**	**0.054**	**1.88†**	**(-0.05, 3.70)**	**0.060**
	2	-0.01	(-0.27, 0.23)	0.940	**1.88***	**(0.04, 3.75)**	**0.048**	**1.87†**	**(-0.02, 3.76)**	**0.054**
	3	-0.36	(-1.47, 0.82)	0.534	**2.24***	**(0.08, 4.44)**	**0.048**	**1.88***	**(0.10, 3.70)**	**0.034**

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

NOTE: Outcomes were measured during demonstration Year 3 only. The mediator examined in this exhibit is NCQA Level 3 PCMH recognition. For each beneficiary outcome measure, we display one row of estimates for each of the three demonstration years during which an FQHC could have achieved recognition (labeled the Recognition Achievement Year). A reader can look down each of these three rows to examine how estimates vary depending upon the timing of the attainment of recognition (in Year 1, soon after the demonstration started, during Year 2, or during Year 3 as the demonstration ended).

[a] FQHC visits included any visit to an FQHC regardless of provider specialty. PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

11.3. Mediated Demonstration Effect on Process Measures

While we did not find consistent demonstration effects on process measures in our demonstration claims analyses (Chapter Nine), the results of our mediation analyses suggest that the demonstration improved performance on process measures of quality in the last year of the demonstration among sites that achieved NCQA Level 3 recognition by that year (Exhibit 11.4). For three of four diabetes process measures that we examined (in addition to the composite measure), we observed that most of the improvement in performance exhibited by demonstration sites could be explained by achievement of NCQA Level 3 PCMH recognition. Across the three measures, the improvement attributable to NCQA Level 3 PCMH recognition ranged from 0.9 of a percentage point to 1.6 percentage points. In two of the three cases, the mediated effect was only present among sites that achieved recognition in Year 3. For the total demonstration effect for the aggregate four diabetes measures, we noted a significant p-value across all three years ($p<0.1$).

Exhibit 11.4. Three Effects of the Demonstration on Process Measures (NCQA Level 3 Mediator)

Outcome Measure	Recognition Achievement Year	Mediated Demonstration Effect (percentage points)			Direct Demonstration Effect (percentage points)			Total Demonstration Effect (percentage points)		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
All 4 recommended tests for patients with diabetes	1	0.02	(–0.03, 0.12)	0.510	0.84	(–0.11, 1.86)	0.104	**0.86†**	**(–0.10, 1.89)**	**0.098**
	2	0.06	(–0.09, 0.25)	0.482	0.80	(–0.16, 1.75)	0.110	**0.87†**	**(–0.09, 1.77)**	**0.084**
	3	**1.29*** **	**(0.58, 2.02)**	**<0.001**	–0.45	(–1.57, 0.68)	0.448	**0.84†**	**(–0.07, 1.79)**	**0.080**
HbA1c test (diabetes patients)	1	0.02	(–0.04, 0.09)	0.570	**1.02***	**(0.04, 1.97)**	**0.030**	**1.04***	**(0.06, 1.99)**	**0.028**
	2	**0.19***	**(0.03, 0.39)**	**0.018**	0.81	(–0.15, 1.75)	0.100	**1.00***	**(0.04, 1.91)**	**0.038**
	3	**0.85***	**(0.13, 1.56)**	**0.024**	0.16	(–1.05, 1.41)	0.808	**1.01†**	**(0.00, 1.98)**	**0.052**
LDL test (diabetes patients)	1	0.03	(–0.04, 0.14)	0.464	0.65	(–0.50, 1.83)	0.288	0.68	(–0.46, 1.87)	0.268
	2	0.05	(–0.17, 0.25)	0.632	0.66	(–0.60, 1.80)	0.296	0.71	(–0.51, 1.85)	0.254
	3	0.40	(–0.49, 1.31)	0.374	0.27	(–1.20, 1.71)	0.748	0.68	(–0.48, 1.84)	0.270
Nephropathy test (diabetes patients)	1	0.00	(–0.09, 0.12)	0.920	**2.28****	**(0.85, 3.71)**	**0.002**	**2.29****	**(0.84, 3.68)**	**0.002**
	2	0.11	(–0.15, 0.37)	0.380	**2.19****	**(0.74, 3.55)**	**0.004**	**2.30****	**(0.81, 3.58)**	**0.002**
	3	**1.56****	**(0.54, 2.60)**	**0.008**	0.73	(–1.10, 2.42)	0.416	**2.30****	**(0.83, 3.60)**	**0.002**
Eye exam (diabetes patients)	1	0.02	(–0.04, 0.11)	0.596	0.15	(–0.83, 1.18)	0.754	0.17	(–0.83, 1.17)	0.734
	2	0.11	(–0.06, 0.31)	0.200	0.04	(–0.92, 1.08)	0.990	0.15	(–0.74, 1.19)	0.800
	3	**1.00****	**(0.30, 1.70)**	**0.006**	–0.82	(–2.07, 0.29)	0.162	0.18	(–0.84, 1.16)	0.698
Lipid test (ischemic vascular disease patients)	1	0.06	(–0.05, 0.23)	0.336	–0.07	(–1.42, 1.15)	0.916	–0.01	(–1.36, 1.28)	0.996
	2	0.15	(–0.05, 0.40)	0.154	–0.13	(–1.52, 1.26)	0.864	0.02	(–1.37, 1.40)	0.972
	3	0.02	(–1.01, 1.01)	0.950	0.00	(–1.72, 1.77)	0.996	0.02	(–1.42, 1.37)	0.976

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

NOTE: Outcomes were measured during demonstration Year 3 only. The mediator examined in this exhibit is NCQA Level 3 recognition. For each beneficiary outcome measure, we display one row of estimates for each of the three demonstration years during which an FQHC could have achieved recognition. A reader can use these rows to examine how estimates vary depending upon the timing of the attainment of recognition.
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

11.4. Mediated Demonstration Effect on Spending Measures

Some of the most compelling evidence of the importance of PCMH recognition in explaining the demonstration's impact comes from our analyses of spending. With our mediation analyses, we observed statistically significant impacts of the demonstration among sites that were able to achieve NCQA Level 3 PCMH recognition. On average, NCQA Level 3 PCMH recognition mediated a $139 decrease per beneficiary in overall expenditures among demonstration sites relative to comparison sites. However, the other direct effects of the demonstration were independently associated with an increase of $224 per beneficiary. Thus, the total demonstration effect was a nonsignificant increase in spending of $85. This finding suggests that participation in the demonstration increased expenditures, potentially because access was expanded without the care coordination infrastructure in place. As discussed in Section 3.1, demonstration site leaders reported having to make substantial investments in PCMH changes from their own outlays in order to support change. However, cost reductions associated with NCQA Level 3 recognition suggest that demonstration sites that achieved NCQA Level 3 recognition might have been able to control spending if other external costs associated with demonstration sites (e.g., investments in IT, participation in ACOs, Medicaid) were minimized.

Exhibit 11.5. Three Effects of the Demonstration on Beneficiary Spending (NCQA Level 3 Mediator)

Outcome Measure	Recognition Achievement Year	Mediated Demonstration Effect ($)			Direct Demonstration Effect ($)			Total Demonstration Effect ($)		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
Total Medicare expenditures	1	2.41	(–13.76, 26.31)	0.806	75.88	(–102.60, 261.68)	0.426	78.29	(–107.31, 264.32)	0.410
	2	–18.79	(–50.88, 2.85)	0.100	95.68	(–83.41, 278.69)	0.324	76.89	(–100.90, 264.64)	0.412
	3	**–139.10***	**(–251.96, –22.17)**	**0.016**	**223.80***	**(8.52, 438.27)**	**0.042**	84.69	(–86.95, 271.62)	0.372
Inpatient	1	–0.12	(–11.09, 11.26)	0.970	14.77	(–98.18, 131.42)	0.804	14.65	(–100.06, 134.74)	0.812
	2	–7.32	(–24.82, 5.91)	0.302	20.47	(–97.85, 137.95)	0.710	13.15	(–102.91, 133.93)	0.822
	3	–35.71	(–105.89, 38.84)	0.344	55.08	(–80.64, 190.22)	0.414	19.37	(–91.26, 133.98)	0.744
Skilled nursing facility	1	–0.39	(–3.93, 3.01)	0.768	–12.06	(–46.50, 21.14)	0.526	–12.46	(–47.56, 21.47)	0.514
	2	–0.96	(–5.77, 2.90)	0.644	–11.53	(–49.45, 23.69)	0.552	–12.48	(–50.53, 23.75)	0.518
	3	–7.05	(–29.94, 14.16)	0.524	–4.99	(–47.73, 37.44)	0.814	–12.05	(–46.41, 24.90)	0.478
Home health	1	–0.02	(–2.84, 2.49)	0.996	–14.50	(–39.69, 11.75)	0.258	–14.52	(–40.12, 11.52)	0.274
	2	**–3.04***	**(–7.67, –0.08)**	**0.044**	–10.63	(–35.98, 13.53)	0.404	–13.67	(–39.45, 10.86)	0.294
	3	**–31.19*****	**(–47.56, –14.70)**	**<0.001**	18.24	(–11.19, 47.90)	0.240	–12.95	(–39.16, 12.23)	0.314
Outpatient facility	1	1.19	(–3.78, 7.99)	0.654	**48.11†**	**(–3.61, 100.57)**	**0.070**	49.30	(–2.72, 103.23)	0.068
	2	–3.35	(–11.17, 2.65)	0.312	**49.86†**	**(–4.73, 100.95)**	**0.064**	**46.51†**	**(–6.06, 97.96)**	**0.078**
	3	–10.26	(–45.56, 23.03)	0.542	**57.34†**	**(–4.13, 120.32)**	**0.076**	**47.08†**	**(–2.93, 101.28)**	**0.076**
Hospice	1	–0.70	(–6.87, 3.53)	0.792	23.47	(–26.88, 72.64)	0.350	22.47	(–27.20, 72.86)	0.370
	2	–1.05	(–7.27, 4.52)	0.720	23.28	(–26.60, 69.36)	0.330	22.22	(–26.65, 67.14)	0.354
	3	–25.37	(–55.98, 5.90)	0.124	48.71	(–7.69, 107.09)	0.110	23.34	(–25.32, 73.54)	0.376
Part B expenditures	1	1.03	(–2.94, 6.97)	0.592	13.80	(–25.09, 55.19)	0.510	14.82	(–25.07, 56.65)	0.482
	2	–3.39	(–9.53, 1.74)	0.164	18.76	(–21.78, 60.48)	0.378	15.37	(–23.81, 57.04)	0.484
	3	**–33.73***	**(–60.89, –8.91)**	**0.014**	**49.85***	**(2.15, 96.21)**	**0.040**	16.12	(–24.56, 52.96)	0.452
Durable medical equipment	1	0.29	(–0.60, 1.70)	0.524	1.02	(–9.44, 10.98)	0.848	1.32	(–9.40, 11.52)	0.816
	2	–0.59	(–1.94, 0.40)	0.284	2.00	(–8.26, 12.24)	0.714	1.42	(–8.70, 11.63)	0.794
	3	–0.11	(–6.39, 6.06)	0.950	1.14	(–9.93, 12.42)	0.838	1.04	(–8.58, 11.21)	0.892

Outcome Measure	Recognition Achievement Year	Mediated Demonstration Effect ($)			Direct Demonstration Effect ($)			Total Demonstration Effect ($)		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
Total outpatient	1	1.76	(–3.08, 10.71)	0.516	47.38	(–5.24, 103.47)	0.094	**49.14†**	**(–6.09, 102.68)**	**0.080**
	2	–3.77	(–11.87, 2.06)	0.220	**50.26†**	**(–1.51, 102.02)**	**0.058**	**46.49†**	**(–3.26, 99.34)**	**0.076**
	3	–9.18	(–43.38, 22.49)	0.598	**57.57†**	**(–4.26, 117.79)**	**0.086**	**48.38†**	**(–3.75, 96.66)**	**0.086**
Laboratory	1	–0.43	(–1.91, 0.61)	0.468	–0.37	(–9.38, 8.53)	0.950	–0.80	(–10.07, 8.20)	0.880
	2	–0.52	(–1.92, 0.60)	0.348	0.06	(–9.61, 9.24)	0.974	–0.46	(–10.11, 8.67)	0.942
	3	–1.54	(–7.15, 4.26)	0.602	1.28	(–9.95, 12.12)	0.834	–0.26	(–9.84, 9.08)	0.970
Imaging	1	0.15	(–0.41, 0.89)	0.592	–1.79	(–7.36, 4.24)	0.560	–1.64	(–7.35, 4.62)	0.600
	2	–0.44	(–1.33, 0.21)	0.206	–1.27	(–7.07, 4.58)	0.638	–1.72	(–7.48, 4.21)	0.528
	3	**–6.04*** **	**(–9.93, –2.34)**	**<0.001**	4.56	(–2.61, 12.20)	0.204	–1.49	(–7.59, 4.70)	0.650

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

NOTE: Outcomes were measured during demonstration Year 3 only. The mediator examined in this exhibit is NCQA Level 3 recognition. For each beneficiary outcome measure, we display one row of estimates for each of the three demonstration years during which an FQHC could have achieved recognition (labeled the Recognition Achievement Year). A reader can look down each of these three rows to examine how estimates vary depending upon the timing of the attainment of recognition (in Year 1, soon after the demonstration started, during Year 2, or during Year 3 as the demonstration ended).

† p<0.10; * p<0.05; *** p<0.001. Bold indicates statistically significant results (p<0.10).

The results reported in this section indicate that the achievement of NCQA Level 3 PCMH recognition may play a role in affecting beneficiary outcomes. While the magnitude of the effect varied across measures, results from all three sets of measures (utilization, process, and spending) suggest that PCMH recognition was a pathway through which the demonstration affected beneficiary outcomes.

11.5. Mediated Demonstration Effect on Patient Experience

We selected beneficiary experience outcomes from the survey's patient-centered items for the beneficiary mediation analysis. Results are shown in Exhibit 11.6.

We found some, though limited, evidence of a significant effect of a demonstration site's attainment of NCQA Level 3 PCMH recognition on beneficiary experiences. Of 24 beneficiary experience variables analyzed as outcome measures, we found seven instances of statistically significant mediated demonstration effects—all of which show a positive effect, though one measure (*providers support patient in taking care of their own health*) started with a negative effect in Year 1 and switched to a positive effect by Year 2.

The first rows in Exhibit 11.6 show that beneficiaries attributed to demonstration sites that achieved NCQA Level 3 PCMH recognition were more likely to have received information from their FQHCs about how to access care in a timely manner than beneficiaries attributed to FQHCs that did not achieve Level 3 recognition.

We observed positive significant mediated demonstration effects for providers supporting the patient to take care of their own health, providers giving patients follow-up on test results, and providers discussing the cost of seeing a specialist with the beneficiary. We also observed a significant mediated effect for the CAHPS PCMH *attention to care from other provider* scale. However, we saw no significant mediated effect for our evidence-based measures.

We also observed no significant mediated demonstration effects for coordination of care in the perihospital period, use of ancillary home health services when needed, or cultural competence.

We saw no significant effect for the physical health status outcome, though we did see a significant positive mediated effect of NCQA Level 3 PCMH recognition for mental health status. This indicates that beneficiaries attributed to demonstration sites that achieved NCQA Level 3 PCMH recognition were more likely to significantly improve their mental health than were beneficiaries attributed to FQHCs that did not achieve NCQA Level 3 PCMH recognition. While the result is notable and achieves statistical significance, the effect was small. Of note (and similar to the pattern shown in the spending analysis), for mental health status as an outcome, the total demonstration effect was not significant, with the total mediated effect reflecting a sum of a positive significant mediated effect and a negative significant direct *other* effect.

We also found evidence that factors other than achievement of NCQA Level 3 PCMH recognition affect beneficiary outcomes. As shown in Exhibit 11.6, we observed several variables that had significant direct effects on demonstration FQHCs. While we cannot precisely characterize this pattern, the mediation analysis showed that this direct effect is distinct from the effect of NCQA Level 3 PCMH recognition. This is consistent with our qualitative findings (Chapter Seven) that highlight the complexities of change that FQHCs (both demonstration and comparison sites) have undergone. Medical home recognition can have an impact on beneficiary outcomes, but other patterns of change that the clinic undergoes can also affect beneficiary experiences or outcomes. As noted with mental health status, the other direct demonstration effect path can sometimes be stronger than, and occurring in an opposing direction to, the medical home mediated effect—sometimes in ways that complement the effect of NCQA Level 3 recognition, and sometimes in opposing ways.

Exhibit 11.6. Three Effects of the Demonstration on Beneficiary Reported Processes and Outcomes (NCQA Level 3 Mediator)

Outcome Measure [a]	Recognition Achievement Year	Mediated Demonstration Effect[b]			Direct Demonstration Effect [b]			Total Demonstration Effect [b]		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
Access to care with information-sharing about accessing appointments										
CG-CAHPS: Getting timely appointments, care, and information scales	1	0.00	(–0.06, 0.07)	0.960	**–0.96†**	**(–2.01, 0.03)**	**0.056**	**–0.96†**	**(–2.01, 0.05)**	**0.058**
	2	**0.15***	**(0.01, 0.34)**	**0.040**	**–1.07†**	**(–2.18, 0.00)**	**0.050**	**–0.92†**	**(–2.03, 0.09)**	**0.88**
	3	**1.06****	**(0.41, 1.76)**	**0.004**	**–1.96*****	**(–3.14, –0.85)**	**<0.001**	**–0.90†**	**(–1.82, 0.04)**	**0.062**
Evidence-based care										
Immunizations										
Had a flu shot during most recent 12 months (%)	1	–0.06	(–0.38, 0.13)	0.588	–1.98	(–5.03, 1.06)	0.208	–2.04	(–5.13, 1.05)	0.200
	2	0.09	(–0.31, 0.54)	0.622	–2.01	(–5.13, 1.20)	0.232	–1.92	(–5.00, 1.38)	0.258
	3	0.23	(–2.07, 2.32)	0.812	–2.07	(–5.85, 1.62)	0.268	–1.84	(–5.03, 1.19)	0.240
Had a pneumonia shot (%)	1	0.16	(–0.12, 0.61)	0.302	1.85	(–1.34, 4.97)	0.242	2.01	(–1.16, 5.19)	0.202
	2	0.11	(–0.36, 0.58)	0.584	1.83	(–1.22, 4.90)	0.272	1.93	(–1.19, 5.04)	0.238
	3	0.19	(–2.19, 2.44)	0.860	1.76	(–2.26, 5.54)	0.364	1.95	(–1.32, 5.17)	0.216
Had a shot to prevent shingles? (%)	1	0.07	(–0.09, 0.31)	0.476	0.77	(–1.80, 3.26)	0.538	0.83	(–1.73, 3.30)	0.514
	2	–0.19	(–0.59, 0.10)	0.206	1.06	(–1.53, 3.82)	0.454	0.87	(–1.78, 3.60)	0.536
	3	–0.80	(–2.51, 0.85)	0.400	1.58	(–1.35, 4.45)	0.286	0.78	(–1.65, 3.20)	0.516

Outcome Measure [a]	Recognition Achievement Year	Mediated Demonstration Effect[b]			Direct Demonstration Effect [b]			Total Demonstration Effect [b]		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
Colorectal cancer screening										
Had blood stool within most recent two years or colonoscopy within 10 years (%)	1	–0.02	(–0.51, 0.39)	0.910	–2.71	(–7.50, 2.21)	0.266	–2.74	(–7.49, 2.23)	0.260
	2	0.03	(–0.63, 0.74)	0.890	–2.77	(–7.41, 2.06)	0.248	–2.74	(–7.31, 2.13)	0.248
	3	–0.95	(–4.41, 2.53)	0.560	–1.77	(–7.66, 3.71)	0.546	–2.72	(–7.30, 1.94)	0.272
Providers pay attention to your mental or emotional health										
CAHPS-PCMH: Providers pay attention to mental or emotional health scale	1	0.02	(–0.06, 0.16)	0.702	**2.52*** **	**(0.97, 4.19)**	**<0.001**	**2.54*** **	**(0.98, 4.21)**	**<0.001**
	2	**0.30** **	**(0.07, 0.62)**	**0.008**	**2.30*** **	**(0.66, 3.88)**	**<0.001**	**2.60*** **	**(0.97, 4.15)**	**<0.001**
	3	0.61	(–0.48, 1.68)	0.258	**1.95***	**(0.06, 3.79)**	**0.048**	**2.56*** **	**(0.95, 4.26)**	**<0.001**
Beneficiary ratings of providers										
Rating of primary care provider	1	0.01	(–0.04, 0.08)	0.734	0.46	(–0.45, 1.42)	0.324	0.47	(–0.43, 1.47)	0.298
	2	0.06	(–0.08, 0.21)	0.416	0.38	(–0.53, 1.31)	0.450	0.43	(–0.48, 1.39)	0.368
	3	0.37	(–0.21, 0.99)	0.248	0.08	(–0.99, 1.16)	0.874	0.45	(–0.42, 1.35)	0.318
Rating of how helpful, courteous and respectful were office staff	1	–0.10	(–0.10, 0.05)	0.682	–0.08	(–0.96, 0.90)	0.872	–0.10	(–1.01, 0.89)	0.852
	2	–0.06	(–0.22, 0.08)	0.342	–0.02	(–0.91, 0.89)	0.958	–0.08	(–0.95, 0.81)	0.848
	3	0.24	(–0.43, 0.94)	0.460	–0.27	(–1.41, 0.86)	0.654	–0.02	(–0.99, 0.95)	0.972
Health literacy: disease self-management										
CAHPS Health	1	–0.03	(–0.15, 0.05)	0.502	–0.69	(–2.00, 0.62)	0.308	–0.72	(–2.01, 0.59)	0.280
	2	–0.03	(–0.22, 0.15)	0.762	–0.68	(–1.93, 0.64)	0.292	–0.70	(–1.91, 0.65)	0.264

Outcome Measure [a]	Recognition Achievement Year	Mediated Demonstration Effect[b]			Direct Demonstration Effect [b]			Total Demonstration Effect [b]		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
Literacy: disease self-management scale	3	0.08	(–0.86, 0.96)	0.836	–0.75	(–2.29, 0.84)	0.356	–0.67	(–2.00, 0.67)	0.324
Providers support beneficiary self-care										
CAHPS PCMH: Providers discuss medication decisions	1	–0.04	(–0.25, 0.10)	0.636	0.86	(–0.96, 2.76)	0.364	0.83	(–1.05, 2.73)	0.378
	2	0.03	(–0.24, 0.33)	0.790	0.84	(–0.86, 2.63)	0.350	0.88	(–0.88, 2.63)	0.334
	3	0.54	(–0.76, 1.83)	0.444	0.38	(–1.90, 2.65)	0.724	0.92	(–0.98, 2.72)	0.302
CAHPS-PCMH: Providers support patient in taking care of their own health scale	1	–0.03	(–0.17, 0.06)	0.630	**1.69***	**(0.02, 3.33)**	**0.046**	**1.66†**	**(–0.01, 3.31)**	**0.054**
	2	**0.24***	**(0.00, 0.54)**	**0.046**	**1.55†**	**(–0.19, 3.12)**	**0.068**	**1.79***	**(0.06, 3.30)**	**0.042**
	3	0.93	(–0.24, 2.07)	0.118	0.82	(–1.14, 2.68)	0.424	**1.76***	**(0.17, 3.32)**	**0.034**
CAHPS-PCMH: Providers give patients follow-up on test results	1	0.06	(–0.08, 0.28)	0.406	–0.44	(–2.26, 1.34)	0.650	–0.38	(–2.20, 1.39)	0.690
	2	**0.33***	**(0.06, 0.67)**	**0.018**	–0.73	(–2.58, 1.08)	0.460	–0.40	(–2.16, 1.46)	0.674
	3	**1.56***	**(0.36, 2.78)**	**0.016**	**–1.96†**	**(–4.13, 0.21)**	**0.080**	–0.40	(–2.25, 1.51)	0.678
CAHPS-PCMH: Providers discuss cost of seeing a specialist	1	0.09	(–0.17, 0.49)	0.592	0.65	(–2.92, 4.30)	0.730	0.74	(–2.85, 4.43)	0.682
	2	**0.51***	**(0.01, 1.22)**	**0.046**	0.20	(–3.18, 3.68)	0.892	0.71	(–2.73, 4.16)	0.688
	3	0.91	(–1.36, 3.32)	0.418	–0.19	(–4.34, 3.65)	0.920	0.72	(–2.76, 4.25)	0.690
Coordination of care around hospitalization										

Outcome Measure [a]	Recognition Achievement Year	Mediated Demonstration Effect[b]			Direct Demonstration Effect [b]			Total Demonstration Effect [b]		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
Doctor, nurse, or other person from attributed FQHC visited patient during most recent hospital stay (%)	1	0.03	(–1.65, 2.03)	0.992	–0.71	(–13.14, 12.20)	0.920	–0.68	(–13.02, 12.29)	0.992
	2	–0.09	(–2.80, 2.50)	0.902	–0.53	(–12.87, 11.68)	0.952	–0.62	(–12.47, 11.22)	0.924
	3	–3.84	(–12.39, 4.12)	0.390	3.46	(–12.30, 17.31)	0.632	–0.38	(–12.45, 11.51)	0.960
Coordination of care between providers										
CAHPS PCMH attention to care from other provider scale	1	–0.04	(–0.19, 0.05)	0.478	1.26	(–0.34, 2.84)	0.120	1.22	(–0.36, 2.80)	0.130
	2	0.02	(–0.20, 0.26)	0.854	1.26	(–0.30, 2.80)	0.108	1.28	(–0.25, 2.86)	0.106
	3	0.10	(–0.98, 1.12)	0.838	1.13	(–0.57, 2.93)	0.230	1.23	(–0.24, 2.76)	0.110
In the last 12 months, specialists the patient saw seemed to know the important information about the patient's medical history (%)	1	–0.04	(–0.50, 0.28)	0.848	**4.20†**	**(–0.61, 8.77)**	**0.088**	**4.16†**	**(–0.70, 8.63)**	**0.086**
	2	–0.01	(–0.57, 0.47)	0.980	**4.39†**	**(–0.10, 9.24)**	**0.062**	**4.38†**	**(–0.10, 9.21)**	**0.060**
	3	–1.61	(–4.61, 1.30)	0.280	**6.13***	**(0.35, 11.84)**	**0.040**	**4.52†**	**(–0.38, 9.51)**	**0.070**
In the last 12 months, how	1	–0.03	(–0.27, 0.17)	0.784	0.75	(–2.10, 3.44)	0.568	0.72	(–2.17, 3.57)	0.600

Outcome Measure [a]	Recognition Achievement Year	Mediated Demonstration Effect[b]			Direct Demonstration Effect [b]			Total Demonstration Effect [b]		
		Estimate	95% CI	p-value	Estimate	95% CI	p-value	Estimate	95% CI	p-value
often did the provider seem informed and up-to-date about the care you got from specialists?	2	–0.09	(–0.50, 0.27)	0.622	0.79	(–2.08, 3.56)	0.600	0.70	(–2.12, 3.45)	0.618
	3	**1.83†**	**(–0.07, 3.83)**	**0.052**	–0.99	(–4.23, 2.42)	0.540	0.83	(–2.05, 3.61)	0.600
Access to home services for those reporting they need home services										
Access to home services	1	–0.01	(–0.22, 0.19)	0.874	2.49	(–0.56, 5.35)	0.106	2.47	(–0.59, 5.32)	0.104
	2	–0.06	(–0.43, 0.31)	0.758	2.57	(–0.28, 5.68)	0.104	2.51	(–0.34, 5.64)	0.104
	3	0.00	(–2.17, 2.07)	0.984	2.40	(–1.19, 5.84)	0.184	2.40	(–0.54, 5.21)	0.122
CAHPS cultural competence										
CAHPS: Cultural competence	1	0.00	(–0.05, 0.05)	0.978	0.37	(–0.46, 1.28)	0.336	0.37	(–0.47, 1.28)	0.342
	2	–0.04	(–0.16, 0.07)	0.476	0.39	(–0.39, 1.18)	0.326	0.36	(–0.44, 1.13)	0.376
	3	–0.14	(–0.69, 0.42)	0.638	0.48	(–0.48, 1.50)	0.322	0.34	(–0.48, 1.16)	0.416

NOTE: Outcomes were measured during demonstration Year 3 only. For each beneficiary outcome measure, we display one row of estimates for each of the three demonstration years during which an FQHC could have achieved recognition (labeled the Recognition Achievement Year). A reader can look down each of these three rows to examine how estimates vary depending upon the timing of the attainment of recognition (in Year 1, soon after the demonstration started, during Year 2, or during Year 3 as the demonstration ended).

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] Descriptions of all measures can be found in Appendix D.

[b] Estimates and p-values from multivariable linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the demonstration and comparison groups; beneficiary survey measure from the follow-up/late beneficiary survey.

11.6. Limitations of the Mediation Analysis

The mediation analysis provided evidence that the achievement of NCQA Level 3 PCMH recognition had an effect on some beneficiary outcomes. However, mediation analyses are associated with some limitations:

- Conceptually, it is possible that the causal link between NCQA Level 3 PCMH recognition and the outcome is an assumption (i.e., recognition is just a byproduct of some unidentified process that is affected by the demonstration). However, in that case, the NCQA recognition is the observation of such unidentified process and as such, this is not an active concern.
- Our measurement of recognition for the mediation analyses defines NCQA Level 3 PCMH recognition according to the year in which FQHCs successfully achieve that recognition. However, with this demonstration, many sites functioning at the NCQA Level 3 recognition level delayed the submission of their recognition applications.[65] Qualitative interviews highlighted that sites often delayed their applications to provide more time to refine their evidence for readiness, even though they were confident they would achieve recognition. This means that, technically, some sites had the capability to achieve recognition status even though they had not yet submitted the application or achieved recognition status.

11.7. Chapter Summary and Conclusion

Overall, the results of the mediation analysis provide evidence that the achievement of NCQA Level 3 PCMH recognition had an effect on some beneficiary outcomes among demonstration sites.

- *Utilization*: Among the seven utilization measures examined, we found statistically significant mediation effects for PCMH recognition on FQHC visits and non-FQHC primary care visits. When examining visits to primary care physicians, we found strong evidence that the demonstration affected utilization through a pathway *other than* PCMH recognition.
- *Process*: For three of the four diabetes process measures we examined (in addition to a composite measure), we observed that most of the improvement in performance exhibited by demonstration sites was attributable to achievement of NCQA Level 3 PCMH recognition.

[65] Because recognition status is time limited, earlier applications and achievement of recognition is associated with the FQHC having an earlier need for reapplication and its associated application fees. This is one reason sites delayed their applications. Additionally, while demonstration sites committed to attempt to achieve NCQA Level 3 recognition by the end of the demonstration, they received no reward with this demonstration for achieving recognition sooner.

- *Spending*: We observed statistically significant impacts of the demonstration on Medicare expenditures when comparing changes over time among beneficiaries attributed to demonstration FQHCs that achieved NCQA Level 3 PCMH recognition to changes over time among beneficiaries attributed to sites that did not achieve NCQA Level 3 PCMH recognition. On average, Level 3 recognition was associated with a $139 decrease in spending among demonstration sites relative to comparison sites. However, other factors associated with demonstration were independently associated with an increase of $224 per beneficiary. Thus, the total demonstration effect was a nonsignificant increase in spending of $85.
- *Patient experience:* We saw limited evidence of a significant effect of a demonstration site's attainment of NCQA Level 3 PCMH recognition on beneficiary experiences. Of 24 beneficiary experience variables analyzed as outcome measures, we found seven instances of statistically significant mediated demonstration effects—all of which show a positive effect, though one measure (providers support patient in taking care of their own health) started with a negative effect in Year 1 and switched to a positive effect by Year 2.
- These analyses also found evidence of a significant direct effect from factors other than NCQA Level 3 PCMH recognition on beneficiary outcomes. Other factors might include the many, sometimes competing, initiatives in which FQHCs are involved to improve beneficiary care and outcomes, such as financial and organizational support from HRSA, ARRA, ONC, and State Medicaid agencies; involvement with ACOs and new payment models; and increasing access to technologies to improve care processes, including EHR systems, decision support mechanisms, and registries.

Concluding Thoughts for Key Policy Question 2

On the whole, analyses of claims and beneficiary survey data found few significant differences in beneficiary processes and outcomes between the demonstration and comparison groups.

While we did observe significant increases over time in FQHC and primary care visits among demonstration FQHCs relative to comparison FQHCs, we did not see many of the improvements in patient outcomes that we had expected to see at the start of the evaluation, such as a decrease in ED use. Instead, we observed a small but consistently increasing trend in ED visits over the three years of the demonstration. Nor did we see a decrease in total expenditures, although there were some decreases in individual categories of spending.

We believe that the lack of observed effects was due to several factors, including the fact, as discussed in Chapter Two, that many sites achieved NCQA Level 3 PCMH recognition only toward the very end of the three-year demonstration, which left little time in which to observe beneficiary outcomes resulting from the demonstration.

At the same time, we recognized that, by the end of the demonstration, both demonstration and comparison groups included a mixture of FQHCs that had achieved NCQA Level 3 PCMH

recognition and FQHCs that had not (Chapter Two). The exposure of comparison sites to external funding and TA also decreased observable differences between demonstration and comparison sites, reducing the chance that we might detect significant demonstration effects on beneficiary outcomes.

The mediation analyses reported in Chapter Eleven show that NCQA Level 3 PCMH recognition was associated with some positive effects on beneficiaries attributed to demonstration FQHCs. However, when looking at the results for demonstration FQHCs versus comparison FQHCs, we recognized that other factors besides NCQA Level 3 PCMH recognition also had an effect on beneficiary outcomes, potentially muting the effect of NCQA Level 3 PCMH recognition. Drawing from the results of our interviews, we suggest that the other factors influencing outcomes might include the many and sometimes competing initiatives in which FQHCs are involved to improve beneficiary care and outcomes, such as financial and organizational support from HRSA, ARRA, ONC, and State Medicaid agencies; involvement with ACOs and new payment models; and increasing access to technologies to improve care processes, including EHR systems, decision support mechanisms, and registries.

While the results of the mediation analyses showed that achieving NCQA Level 3 PCMH recognition was associated with some positive effects for beneficiaries attributed to demonstration FQHCs, we wanted to better understand the effect of achieving medical home recognition separate from the effect of the demonstration. We therefore conducted a series of analyses that assess whether FQHCs that received NCQA Level 3 PCMH recognition achieved better outcomes than beneficiaries attributed to other FQHCs. The results of these "medical home effect" analyses are described in the next section.

KEY POLICY QUESTION 3

In the next three chapters, we address issues related to Key Policy Question 3: *How does medical home recognition affect beneficiary processes and outcomes?*

To answer this question, we conducted a series of "medical home effect" analyses. These examined whether medical home recognition attainment was associated with improvements in processes and outcomes for beneficiaries attributed to FQHCs that achieved medical home recognition compared with beneficiaries attributed to FQHCs that did not. These analyses are important because CMS and other policymakers, while interested in the effects of the demonstration, are also likely to be interested in understanding whether the PCMH model—and NCQA Level 3 PCMH recognition in particular—had a demonstrable effect on the cost and quality of care for Medicare beneficiaries, regardless of the effectiveness of the intervention supports provided as part of the FQHC APCP Demonstration.

In Chapters Twelve and Thirteen, we present a series of analyses that examine whether beneficiaries attributed to FQHCs that achieved NCQA Level 3 PCMH recognition achieved better outcomes than beneficiaries attributed to FQHCs that received a form of recognition other than NCQA Level 3 or no recognition. Chapter Twelve focuses on utilization, processes and spending outcomes, while Chapter Thirteen focuses on patient experience outcomes.

Chapter Fourteen expands on these analyses by examining the effect of alternative forms of PCMH recognition, including NCQA Levels 1 and 2 PCMH recognition, as well as recognition from AAAHC, the Joint Commission, and state recognition programs.

12. The Effects of Medical Home Recognition on Beneficiary Utilization, Processes, and Spending

As discussed in Chapters Nine and Ten, analyses of claims and beneficiary survey data found few significant differences in beneficiary processes and outcomes between the demonstration and comparison groups. However, the mediation analyses reported in Chapter Eleven showed that NCQA Level 3 PCMH recognition was associated with some positive demonstration effects on beneficiaries attributed to demonstration FQHCs, although those analyses also indicated that other factors besides NCQA Level 3 PCMH recognition could influence beneficiary outcomes. We realized therefore that we needed to focus on understanding the effect of medical home recognition ("medical home effect") apart from the effect of participating in the demonstration ("demonstration effect"). In this chapter, we seek to answer the question, *How does medical home recognition affect beneficiary processes and outcomes?*

To answer this question, we conducted three related medical home analyses using slightly different reference groups for comparisons; each has unique strengths and weaknesses (see Exhibit 12.1). Collectively, these analyses provide a more thorough picture of the effect of achieving medical home recognition on beneficiary outcomes than was possible through the analyses of the demonstration effect (Chapters Nine, Ten, and Eleven).[66]

[66] In all the analyses presented in this chapter, we define medical home recognition as FQHC achievement of NCQA Level 3 PCMH recognition. These analyses focus on differences in outcomes between FQHCs that achieved NCQA Level 3 PCMH recognition compared to sites without such recognition (reference groups) after controlling for baseline differences. While recognition is awarded by NCQA on a single date in time, achieving medical home recognition is a process. Sites work for months and years to achieve the many attributes of advanced primary care required for NCQA Level 3 PCMH recognition. Some of the sites in the three reference groups (analytic comparison groups) examined in this chapter will have already achieved some features of medical homeness (and, in some cases, have achieved some form of PCMH recognition) although none of the reference groups has achieved NCQA Level 3 PCMH recognition. These differences between groups are explained below.

Exhibit 12.1. Three Different Medical Home Effect Analyses

Analysis 1			
Includes beneficiaries attributed to demonstration or comparison FQHCs	Outcomes for beneficiaries attributed to **all FQHCs** (both demonstration and comparison) **that achieved NCQA Level 3 PCMH recognition** (N=445 FQHCs)	***versus***	Outcomes for beneficiaries attributed to **all FQHCs that did not achieve NCQA Level 3 PCMH recognition** (N=885 FQHCs)
Analysis 2			
Includes beneficiaries attributed to demonstration or comparison FQHCs	Outcomes for beneficiaries attributed to **all FQHCs that achieved NCQA Level 3 PCMH recognition** (N=445 FQHCs)	***versus***	Outcomes for beneficiaries attributed to **all FQHCs that received no recognition** (N=601 FQHCs)
Analysis 3			
Includes only beneficiaries attributed to comparison FQHCs	Outcomes for beneficiaries attributed to **comparison FQHCs that achieved NCQA Level 3 PCMH recognition** (N=94 FQHCs)	***versus***	Outcomes for beneficiaries attributed to **comparison FQHCs that received no recognition** (N=519 FQHCs)

In Medical Home Effect Analyses 1 and 2, we compared outcomes for all FQHCs that achieved NCQA Level 3 PCMH recognition (whether from the demonstration or comparison group) with outcomes, respectively, for (a) sites that *did not achieve NCQA Level 3 PCMH recognition*, and (b) sites that *received no recognition at all*. In Medical Home Effect Analysis 3, we focused only on comparison sites, examining outcomes for beneficiaries attributed to comparison FQHCs that achieved NCQA Level 3 PCMH recognition with outcomes for beneficiaries attributed to *comparison FQHCs that received no recognition*.

A strength of **Medical Home Effect Analysis 1** is that it included all of the evaluation's 1,330 FQHCs and their attributed beneficiaries. However, defining the reference group to include both FQHCs that achieved alternative forms of recognition (e.g., NCQA Level 1 or 2, AAAHC, Joint Commission, or state-based) as well as FQHCs that received no recognition could lead to an underestimation of the effect of NCQA Level 3 PCMH recognition.

A strength of **Medical Home Effect Analysis 2** is the sharper contrast in beneficiary outcomes associated with FQHCs that achieved NCQA Level 3 PCMH recognition and FQHCs that received no recognition. This analysis omitted 284 FQHCs with recognition types other than NCQA Level 3 PCMH.

Medical Home Effect Analysis 3 helps address concerns that the medical home effect estimated among demonstration FQHCs was potentially influenced by the commitment of demonstration FQHCs to achieve NCQA Level 3 PCMH recognition by the end of the three-year demonstration, placing time pressure on many demonstration sites (see Chapters Seven and

Eight). To evaluate the medical home effect independent of such time pressure, we focus only on comparison FQHCs.

For each analysis we used propensity score weights derived from models predicting the achievement of NCQA Level 3 PCMH recognition by the end of the demonstration. We assessed the effect of achieving NCQA Level 3 PCMH recognition using the same set of claims-based utilization, process, and spending measures as we used in the demonstration effect analyses (Chapters Nine and Ten). All analyses in this chapter used the rolling entry beneficiary cohort described in Chapter Nine. Additional information on the methods underlying the medical home effect analyses is available in Appendix M.

The results reported throughout this chapter should be interpreted with one important caveat in mind. Although we used a difference-in-differences methodology to adjust for both observed and unobserved differences between sites that achieved NCQA Level 3 PCMH recognition and those that did not, this design was unable to adjust for any unobserved differences that may have led to differential trends over time in beneficiary outcomes—a condition known as selection-maturation. For example, clinicians or staff practicing in sites that ultimately achieved NCQA Level 3 PCMH recognition may have had different levels of commitment to practice transformation—a characteristic that we could not measure systematically across all 1,330 sites—than did clinicians and staff at sites not achieving recognition. We are somewhat reassured that tests of parallel trends in beneficiary outcomes between recognized sites and nonrecognized sites in the year prior to the start of the demonstration indicated few substantive differences in trends across a wide range of utilization and spending outcomes. Nevertheless, our inability to fully control for unobserved differences between sites that did and did not achieve recognition remains an important caveat.

12.1. Results of Medical Home Effect Analysis 1

Medical Home Effect Analysis 1 focused on beneficiary outcomes for FQHCs that achieved NCQA Level 3 PCMH recognition compared with FQHCs that did not achieve NCQA Level 3 PCMH recognition (see Exhibit 12.2). In this section we present year-by-year results on utilization, process, and spending measures, along with the cumulative results at the end of the first, second, and third years of the demonstration.[67]

[67] Results for patient experience are shown in Chapter Thirteen. Year-by-year results compare the difference in outcomes in each year to the difference in outcomes in the baseline period. Cumulative results compare the pooled results from the first demonstration year through the year specified to the difference in outcomes in the baseline period. For example, year-by-year results presented for Year 3 compares differences in outcomes in Year 3 relative to the differences at baseline whereas the cumulative Year 3 results reflect the average difference in outcomes in Years 1, 2, and 3 relative to the differences at baseline.

Exhibit 12.2. Description of Medical Home Effect Analysis 1

Analysis Type	Inclusion/Exclusion Criteria		Medical Home Effect Specification		Reference Group Specification	
	Included FQHCs	Excluded FQHCs	FQHC Characteristic	N	FQHC Characteristic	N
Medical Home Effect 1	1,330 FQHCs, including both demonstration and comparison FQHCs	None	All demonstration and comparison FQHCs that achieved NCQA Level 3 PCMH recognition	445	All FQHCs with a type of recognition other than NCQA Level 3 PCMH[a] and All FQHCs that received no medical home recognition	885

[a] We excluded FQHCs with any of the following types of medical home recognition: NCQA Level 1 or 2, AAAHC, Joint Commission, and state-based recognition.

Utilization

Utilization in Non-ED Ambulatory Settings

Beneficiaries receiving care at FQHCs that achieved NCQA Level 3 PCMH recognition had much larger increases in non-ED ambulatory utilization than did beneficiaries receiving care at FQHCs that did not achieve NCQA Level 3 recognition (Exhibit 12.3). Beneficiaries receiving care at NCQA-Level-3-recognized FQHCs also had much higher rates of visits to FQHCs (83 more visits per 1,000 beneficiaries in Year 1 relative to beneficiaries attributed to FQHCs that did not achieve NCQA Level 3 recognition)—a difference that doubled by the end of the demonstration (154 more visits per 1,000 beneficiaries).

Similarly, beneficiaries attributed to NCQA-Level-3-recognized FQHCs had higher rates of visits to primary care physicians—regardless of whether the physician practiced in or outside of an FQHC (54 more visits per 1,000 beneficiaries in Year 1 relative to beneficiaries at sites that did not achieve NCQA Level 3 recognition), a difference that decreased slightly by the third year of the demonstration.[68] Visits to non-FQHC primary care physicians decreased more for beneficiaries attributed to NCQA-Level-3-recognized FQHCs than for beneficiaries receiving care at sites that did not achieve NCQA Level 3 recognition (40 fewer visits per 1,000 beneficiaries to non-FQHC primary care physicians). Visits to specialists also decreased more for beneficiaries receiving care at sites achieving NCQA Level 3 recognition than for

[68] Primary care physician specialties included internal medicine, general practice, family medicine, obstetrics and gynecology, adult health, community health, family practice, primary care, women's health, gerontology, pediatrics, or preventive medicine as defined by taxonomy codes used in the National Plan and Provider Enumeration System.

beneficiaries receiving care at sites not achieving NCQA Level 3 recognition, but only in Year 2 of the demonstration.

These results differed in notable ways from those shown for the demonstration effect analyses in Chapter Nine, which found more modest increases in FQHC visits and no reductions in specialty visits or changes in utilization for physician practices outside the FQHC among beneficiaries receiving care at demonstration sites compared with those receiving care at comparison sites. In contrast, NCQA-Level-3-recognized FQHCs exhibited reductions in both non-FQHC PCP visits and in specialty visits during Years 2 and 3 of the demonstration. One possible explanation for the fewer primary care visits outside of the FQHC is that NCQA-Level-3-recognized FQHCs may have been coordinating care better, so that beneficiaries received a larger proportion of their primary care services from their medical home as opposed to practices outside of the FQHC. Qualitative interviews revealed that FQHCs strived for better coordinated care as a component of their transformation toward medical home recognition.

ED Utilization

An unexpected finding in our demonstration effect analyses (Chapter Nine) was a consistently increasing trend in ED visits among beneficiaries attributed to demonstration sites over the three years of the demonstration. When examining the effect of NCQA Level 3 PCMH recognition on ED utilization, we found a similar pattern in overall ED use among sites achieving such recognition—an increase of 29 more ED visits per 1,000 beneficiaries in the third year of the demonstration at sites that achieved NCQA Level 3 PCMH recognition compared with sites that did not achieve NCQA Level 3 recognition. The results were similar when examining both total ED visits and the subset of ED visits that were not followed by admission to the hospital. [69]

One possible explanation for the gradual increase in ED visits for beneficiaries attributed to NCQA-Level-3-recognized FQHCs is that this trend reflects improved clinic efforts to ensure that beneficiaries get access to needed care, even after clinics closed for the night or on weekends. As medical homes recognized the challenges involved in providing access to specialty care—particularly for patients with behavioral health disorders or multiple chronic conditions—site leader and PCA interviews confirmed that some FQHCs recommended ED visits to ensure that beneficiaries received necessary specialty services.

[69] The total ED visit measure includes both the subset of ED visits that are followed by admission to the hospital and those that are not followed by admission to the hospital.

Inpatient Utilization

Similar to the findings from our demonstration effect analysis (see Chapter Ten), we found no difference in rates of inpatient admissions or readmissions for FQHCs that achieved NCQA Level 3 PCMH recognition compared with those that did not.

We hypothesize that the lack of an effect on inpatient utilization might be due to an inadequate timeframe in which to observe changes in beneficiaries' need for acute care. NCQA Level 3 PCMH recognition criteria also might not adequately cover some medical home features that are likely to have the largest impacts on inpatient utilization. For example, among the Medicare FQHC population, some discretionary hospitalizations could be avoided with additional social support services, optimal evidence-based care, and enhanced self-management. Each of these strategies requires time and resources. While the demonstration supported these interventions, more time and more resources might have been required before the desired effect could be observed.[70]

Exhibit 12.3. Year-by-Year Effects of Achieving NCQA Level 3 PCMH Recognition vs. Not Achieving NCQA Level 3 PCMH Recognition on Claims-Based Measures of Health Care Utilization

	Year 1		Year 2		Year 3	
Outcome Measure	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
Non-ED ambulatory utilization[a]						
FQHC visits	**83.33*** (13.67)**	**<0.001**	**157.08*** (13.40)**	**<0.001**	**154.26*** (11.97)**	**<0.001**
Non-FQHC PCP visits	–8.48 (12.40)	0.494	**–30.62* (14.00)**	**0.029**	**–39.62** (14.31)**	**0.006**
Total PCP visits	**54.08** (16.57)**	**0.001**	**93.15*** (17.21)**	**<0.001**	**43.26* (16.90)**	**0.010**
Total specialist visits	1.18 (14.58)	0.935	**–35.97* (16.27)**	**0.027**	–9.98 (15.49)	0.520
ED utilization						
Total ED visits[b]	**16.66† (10.02)**	**0.097**	**22.55* (9.50)**	**0.018**	**29.45*** (8.91)**	**<0.001**
Outpatient-only ED visits	12.99 (8.88)	0.143	**18.52* (8.33)**	**0.026**	**23.77** (7.70)**	**0.002**
ACSC ED visits	–0.36 (2.25)	0.871	–2.09 (2.39)	0.381	1.48 (1.82)	0.416

[70] As an example, consider a beneficiary with limited access to transportation to the clinic during office hours and the need for careful weight and blood test monitoring. The beneficiary may be hospitalized for serial weight and blood test measurements, although the person does not have the needs that usually prompt acute care hospitalization.

Outcome Measure	Year 1 Estimate (SE)	Year 1 p-value	Year 2 Estimate (SE)	Year 2 p-value	Year 3 Estimate (SE)	Year 3 p-value
Inpatient utilization						
Inpatient admissions	–0.13 (3.78)	0.973	4.12 (3.43)	0.230	–2.91 (3.23)	0.368
Inpatient ACSC admissions	0.33 (1.27)	0.794	–0.20 (1.35)	0.885	0.05 (1.10)	0.962
Inpatient readmissions (measured in percentage points)[c]	0.10 (0.51)	0.838	–0.68 (0.53)	0.203	–0.65 (0.48)	0.176

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] FQHC visits included any visit to an FQHC regardless of provider specialty. PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to specialists at primary care clinics are identified by E&M visit codes.
[b] Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission.
[c] Inpatient readmissions were measured as hospital-wide all-cause unplanned readmissions and were modeled as a binary indicator (i.e., whether or not a beneficiary was hospitalized within 30 days of discharge from the hospital) rather than as a count of readmissions per beneficiary. Thus, a two-part model was not used.

Cumulative Medical Home Effect on Utilization

Findings from the cumulative effect of sites with NCQA Level 3 PCMH recognition compared to sites without NCQA Level 3 PCMH recognition have statistically significant similar trends relative to the year-by-year results (see Exhibit 12.4). Recall that the cumulative effect analyses model the demonstration's impact as an average of yearly effects. The rate of FQHC and total PCP visits increased significantly across all three years (118 FQHC visits and 61 PCP visits per 1,000 beneficiaries by Year 3). We also observed a significant decrease in non-FQHC PCP visits in Year 3 (–31 visits per 1,000 beneficiaries). For two out of three years examined, we noted a significant slight increase in total ED visits (20 visits per 1,000 beneficiaries by Year 3), which is likely due to the rise of outpatient-only ED visits in Years 2 and 3 (18 visits per 1,000 beneficiaries by Year 3).

Exhibit 12.4. Cumulative Effect Analysis of Achieving NCQA Level 3 PCMH Recognition vs. Not Achieving NCQA Level 3 PCMH Recognition on Claims-Based Measures of Health Care Utilization

	Cumulative Medical Home Effect (per 1,000 beneficiaries)					
	Year 1		Year 2		Year 3	
Outcome Measure[a]	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
FQHC visits	**83.33*** (13.67)**	**<0.001**	**117.13*** (11.41)**	**<0.001**	**118.21*** (10.34)**	**<0.001**
Non-FQHC PCP visits	–8.34 (13.01)	0.521	–16.98 (11.45)	0.138	**–31.13** (10.87)**	**0.004**
PCP visits	**54.08** (16.57)**	**0.001**	**75.95*** (14.06)**	**<0.001**	**61.10*** (13.02)**	**<0.001**
Specialist visits	4.30 (15.72)	0.785	–4.95 (13.88)	0.721	–8.26 (12.81)	0.519
All ED visits	15.12 (11.14)	0.175	**19.43* (9.25)**	**0.036**	**19.76* (8.38)**	**0.018**
Outpatient-only ED visits	12.99 (8.88)	0.143	**15.36* (7.37)**	**0.037**	**17.90** (6.64)**	**0.007**
ACSC ED visits	–0.35 (2.20)	0.873	–1.60 (2.02)	0.429	0.07 (1.63)	0.966
Inpatient admissions	2.61 (5.62)	0.642	5.77 (4.42)	0.192	–0.14 (4.04)	0.972
Inpatient admissions	0.99 (1.60)	0.537	0.05 (1.46)	0.971	–0.32 (1.26)	0.801
Inpatient readmissions, percentage points[b]	0.10 (0.51)	0.838	–0.44 (0.43)	0.300	–0.56 (0.38)	0.142

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

* p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] FQHC visits included any visit to FQHCs regardless of provider specialty. Total PCP visits and total specialist visits included both visits to FQHCs and E&M visits to non-FQHCs. PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants. Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission.

[b] Inpatient readmissions were measured as hospital-wide all-cause unplanned readmissions and were modeled as a binary indicator (i.e., whether or not a beneficiary was hospitalized within 30 days of discharge from the hospital) rather than as a count of readmissions per beneficiary.

Processes

FQHCs that achieved NCQA Level 3 PCMH recognition exhibited substantially better performance on most diabetes process measures we examined, as shown in Exhibit 12.5. Using a composite measure encompassing four diabetes screening tests, we found that FQHCs with NCQA Level 3 recognition provided higher quality of care compared with FQHCs that did not achieve NCQA Level 3 recognition during all three years of the demonstration. When examining individual measures, we found that FQHCs achieving NCQA Level 3 recognition experienced improvements relative to sites that did not achieve NCQA Level 3 recognition for all four measures (HbA1c test, LDL test, eye exam, nephropathy test) in at least one year of the demonstration; for two measures (exam, nephropathy test), we observed improvements in all three years.

One notable finding from these analyses was variation in the magnitude of change across measures. NCQA-Level-3-recognized sites were associated with a diminishing level of improvement over time for two measures (HbA1c test, eye exam) and an increasing level of improvement over time for one measure (LDL test). These results may indicate that sites ultimately achieving NCQA Level 3 recognition made rapid progress on several measures before other sites were able to "catch up." These findings are broadly consistent with the observation from our qualitative analysis (Chapter Eight) of a higher intensity of change among demonstration sites, which comprised 79 percent of sites with NCQA Level 3 PCMH recognition.[71]

[71] Qualitative evidence consistent with this discussion can be found in Sections 7.3 and 7.4, as well as in Chapter Six, which discusses stages of NCQA Level 3 PCMH adoption (and rate of movement through the stages). Among the 445 sites that achieved NCQA Level 3 PCMH recognition, 351 (79 percent) were demonstration sites.

Exhibit 12.5. Year-by-Year Effects of Achieving NCQA Level 3 PCMH Recognition vs. Not Achieving NCQA Level 3 PCMH Recognition on Claims-Based Process Measures

Year-by-Year Medical Home Effect (percentage points)						
	Year 1		Year 2		Year 3	
Outcome Measure	Estimate (SE)	p-value	Estimate (SE)	p-value	Estimate (SE)	p-value
All 4 recommended tests for patients with diabetes	**1.89*** (0.38)**	**<0.001**	**1.58*** (0.36)**	**<0.001**	**1.69*** (0.34)**	**<0.001**
HbA1c test	**1.67*** (0.43)**	**<0.001**	0.68 (0.41)	0.102	**0.70† (0.38)**	**0.066**
LDL test	0.48 (0.49)	0.330	0.16 (0.46)	0.728	**1.00* (0.46)**	**0.029**
Eye exam	**1.84*** (0.50)**	**<0.001**	**1.17* (0.47)**	**0.012**	**1.23** (0.46)**	**0.007**
Nephropathy test	**2.62*** (0.55)**	**<0.001**	**3.36*** (0.51)**	**<0.001**	**2.62*** (0.49)**	**<0.001**
Lipid test for patients with ischemic vascular disease	–0.47 (0.69)	0.490	–0.64 (0.65)	0.320	–0.41 (0.66)	0.535

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

Estimates of the cumulative medical home effect on process measures are mostly consistent with the yearly results (see Exhibit 12.6). We observed that the amount of improvement in providing all four diabetes tests decreased across the three years of the demonstration period (1.6 percentage points by Year 3). Similar to the year-by-year results, this aggregate trend was likely driven by similar trends of HbA1c tests (1.1 percentage points by Year 3) and eye exams (1.4 percentage points by Year 3).

Exhibit 12.6. Cumulative Effect Analysis of Achieving NCQA Level 3 PCMH Recognition vs. Not Achieving NCQA Level 3 PCMH Recognition on Process Measures

	Cumulative Medical Home Effect (percentage points)					
	Year 1		Year 2		Year 3	
Outcome Measure	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
All four recommended tests for patients with diabetes	**1.89*** (0.38)**	**<0.001**	**1.62*** (0.31)**	**<0.001**	**1.61*** (0.29)**	**<0.001**
HbA1c test	**1.67*** (0.43)**	**<0.001**	**1.11** (0.36)**	**0.002**	**1.07*** (0.32)**	**<0.001**
LDL–C test	0.48 (0.49)	0.330	0.20 (0.40)	0.606	0.51 (0.36)	0.161
Eye exam	**1.84*** (0.50)**	**<0.001**	**1.46*** (0.40)**	**<0.001**	**1.44*** (0.37)**	**<0.001**
Nephropathy test	**2.62*** (0.55)**	**<0.001**	**2.88*** (0.44)**	**<0.001**	**2.77*** (0.39)**	**<0.001**
Lipid test for patients with ischemic vascular disease	–0.47 (0.69)	0.490	–0.64 (0.56)	0.253	–0.43 (0.52)	0.406

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

Spending

Unlike our demonstration effect analyses in Chapter Nine, which showed that demonstration sites were associated with few changes in spending relative to comparison sites, we found that sites that achieved NCQA Level 3 PCMH recognition were associated with decreases in both total Medicare expenditures and in several spending categories compared with sites that did not achieve NCQA Level 3 recognition.

Regarding total Medicare expenditures, we found that NCQA-Level-3-recognized FQHCs achieved reductions of $248 (p=0.016) per beneficiary in Year 1 of the demonstration and reductions of $156 (p=0.070) in Year 3 of the demonstration relative to sites that did not achieve NCQA Level 3 recognition (see Exhibit 12.7). These reductions were driven primarily by reductions in inpatient, specialty physician, and Year 1 skilled nursing spending. In comparison, our demonstration effect analyses (Chapter Nine) found that participation in the demonstration was not associated with any decrease in total Medicare expenditures.

These findings suggest that NCQA-Level-3-recognized sites may be reducing the need for acute and specialty care because of the enhanced primary care services they provide through their medical homes—particularly by providing greater access to ambulatory care and greater concentration of primary care services within the medical home. This conclusion should be tempered somewhat because, while we observed these effects during all three years of the demonstration, we might have expected the impact of enhanced primary care to be most notable in demonstration Year 3 rather than in Year 1. An effect later in the demonstration period would be consistent with evidence indicating that a several-year window typically is required before a medical home effect on cost is observed.

Exhibit 12.7. Year-by-Year Effects of Achieving NCQA Level 3 PCMH Recognition vs. Not Achieving NCQA Level 3 PCMH Recognition on Medicare Expenditures (per Beneficiary per Year in Dollars)

	Year 1		Year 2		Year 3	
Outcome Measure	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
Total Medicare expenditures without care management fee payments	**–247.74* (103.32)**	**0.016**	–144.03 (89.15)	0.106	**–155.86† (86.13)**	**0.070**
Inpatient	**–184.85* (75.33)**	**0.014**	–52.02 (57.83)	0.368	–62.66 (55.17)	0.256
Skilled nursing facility	**–50.75† (27.41)**	**0.064**	–22.22 (22.10)	0.315	–30.90 (22.87)	0.177
Home health	11.25 (8.62)	0.192	**17.62* (7.75)**	**0.023**	9.32 (6.86)	0.175
Outpatient facility	–8.12 (32.05)	0.800	–14.83 (26.21)	0.572	–21.65 (24.62)	0.379

	Year 1		Year 2		Year 3	
Outcome Measure	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
Hospice	–32.46 (34.96)	0.353	–7.76 (32.86)	0.813	19.79 (41.91)	0.637
Part B expenditures[a]	**–45.85* (21.10)**	**0.030**	**–48.19** (17.98)**	**0.007**	–5.92 (16.14)	0.714
Physicians (primary care)	–2.23 (4.57)	0.625	–1.77 (3.60)	0.623	–3.16 (3.91)	0.419
Physicians (specialist)	**–39.22* (15.25)**	**0.010**	**–37.70** (12.54)**	**0.003**	**–21.65† (11.37)**	**0.057**
Durable medical equipment	–2.11 (8.44)	0.803	–4.95 (7.14)	0.488	–6.75 (7.61)	0.375
Total outpatient[b]	–1.24 (32.95)	0.970	–15.74 (27.43)	0.566	–26.94 (26.03)	0.301
Laboratory	–2.42 (2.81)	0.389	**–5.28* (2.40)**	**0.028**	0.93 (2.33)	0.689
Imaging	–2.24 (2.21)	0.312	**–4.27* (1.75)**	**0.015**	**–3.27* (1.66)**	**0.048**

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01. Bold indicates statistically significant results (p<0.10).
[a] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file, including spending on laboratory, imaging, and physician services provided in ED settings, which are excluded from the primary care physician and specialist physician spending subcategories that are reported in the subsequent two rows.
[b] This category corresponds to outpatient facility claims and all provider claims for services rendered in outpatient places of service.

The cumulative medical home effect on Medicare expenditures in Exhibit 12.8 displays trends similar to those seen in the year-by-year results (Exhibit 12.7). We observed a steady decline through Years 1 to 3 in total Medicare expenditures (average $179 cost saving per beneficiary by Year 3). This decrease in total Medicare expenditures was most likely driven by a statistically significant decline across all three years in inpatient spending (average $96 cost saving per beneficiary by Year 3), noninstitutional provider spending (average $31 cost saving per beneficiary), specialist spending (average cost saving $32 per beneficiary), and skilled nursing facility spending in Year 3 (average $31 cost saving per beneficiary). One slight difference between the year-by-year and aggregate results is that the cumulative medical home effect increase in home health spending is significant in both Years 2 and 3 ($13 per beneficiary by Year 3) but only in Year 2 year-by-year analyses.

Exhibit 12.8. Cumulative Effect Analysis of Achieving NCQA Level 3 PCMH Recognition vs. Not Achieving NCQA Level 3 PCMH Recognition on Medicare Expenditures

	Cumulative Medical Home Effect (dollars)					
	Year 1		Year 2		Year 3	
Outcome Measure[a]	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
Total Medicare expenditures without care management fee payments	**–247.74* (103.32)**	**0.016**	**–192.53* (77.20)**	**0.013**	**–179.39** (68.95)**	**0.009**
Inpatient	**–184.85* (75.33)**	**0.014**	**–117.25* (52.01)**	**0.024**	**–95.63* (44.64)**	**0.032**
Skilled nursing facility	**–50.75† (27.41)**	**0.064**	–32.14 (19.66)	0.102	**–31.42† (17.67)**	**0.075**
Home health	11.25 (8.62)	0.192	**15.43* (6.72)**	**0.022**	**12.50* (5.89)**	**0.034**
Outpatient facility	–8.12 (32.05)	0.800	–19.15 (21.90)	0.382	–17.85 (18.71)	0.340
Hospice	–32.46 (34.96)	0.353	–23.04 (27.77)	0.407	13.42 (32.90)	0.683
Part B expenditures [a]	**–45.85* (21.10)**	**0.030**	**–44.74** (15.11)**	**0.003**	**–30.54* (13.11)**	**0.020**
Physician (primary care)	-2.23 (4.57)	0.625	-2.75 (3.21)	0.391	–4.00 (2.96)	0.176
Physician (specialist)	**–39.22* (15.25)**	**0.010**	**–37.75*** (11.05)**	**0.001**	**–32.14*** (9.49)**	**<0.001**
Durable medical equipment	–2.11 (8.44)	0.803	–1.72 (6.20)	0.781	–7.34 (6.00)	0.221
Total outpatient[b]	–1.24 (32.95)	0.970	–14.48 (22.89)	0.527	–20.74 (19.86)	0.296
Laboratory	–2.42 (2.81)	0.389	**–4.75* (2.14)**	**0.027**	**–3.49† (1.93)**	**0.072**
Imaging	–2.24 (2.21)	0.312	**–3.74* (1.57)**	**0.017**	**–4.00** (1.35)**	**0.003**

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file, including spending on laboratory, imaging, and physician services provided in ED settings, which are excluded from the primary care physician and specialist physician spending subcategories that are reported in the subsequent two rows.
[b] This category corresponds to outpatient facility claims and all provider claims for services rendered in outpatient places of service.

12.2. Results of Medical Home Effect Analysis 2

A strength of the above analysis was that it included all of the evaluation's 1,330 FQHCs and their attributed beneficiaries. However, defining the reference group as the *absence* of NCQA Level 3 PCMH recognition, regardless of alternative forms of recognition, could have underestimated the effect of recognition, given that sites in the reference group (analytic comparison group) might have achieved alternative forms of PCMH recognition, including NCQA Level 1 and Level 2 PCMH recognition. In Medical Home Effect Analysis 2, we limited the reference group to FQHCs (from either demonstration or comparison groups) *that received no medical home recognition*. Exhibit 12.9 shows the criteria for Medical Home Effect Analysis 2 and how they compared to those for Medical Home Effect Analysis 1. Medical Home Effect Analysis 2 excluded sites that achieved alternative forms of recognition (NCQA Level 1, NCQA Level 2, AAAHC, Joint Commission, and state-based recognition).

Exhibit 12.9. Description of Medical Home Effect Analyses 1 and 2

	Inclusion/Exclusion Criteria		Medical Home Effect Specification		Reference Group Specification	
Analysis Type	**Included FQHCs**	**Excluded FQHCs**	**FQHC Characteristic**	**N**	**FQHC Characteristic**	**N**
Medical Home Effect 1	1,330 FQHCs, including both demonstration and comparison FQHCs	None	All demonstration and comparison FQHCs that achieved NCQA Level 3 PCMH recognition	445	All FQHCs with a type of recognition other than NCQA Level 3 PCMH[a] and All FQHCs that received no medical home recognition	885
Medical Home Effect 2	1,046 FQHCs, including both demonstration and comparison FQHCs	284 FQHCs, including both demonstration and comparison FQHCs, with a type of recognition other than NCQA Level 3 PCMH[a]	All demonstration and comparison FQHCs that achieved NCQA Level 3 recognition	445	All demonstration and comparison FQHCs that received no medical home recognition	601

[a] Excluded FQHCs include those with any of the following types of medical home recognition: NCQA Level 1 or 2, AAAHC, Joint Commission, and state-based recognition.

To build on the analyses presented in Section 12.1, in Exhibits 12.10 and 12.11, we compare results for Medical Home Effect Analysis 2 with results for Medical Home Effect Analysis 1. We present results for utilization, process, and spending.

Utilization

Changing the reference group strengthened the medical home effect associated with each of the six utilization measures we examined. Exhibit 12.10 shows that NCQA-Level-3-PCMH-recognized sites were *not* associated with increases in ED visits compared with sites that achieved no recognition. In addition, inpatient admissions decreased more for NCQA-Level-3-recognized sites (seven admissions per 1,000 beneficiaries in Year 1 and ten admissions per 1,000 beneficiaries in Year 3) compared with sites that achieved no recognition.

Process

Changing the reference group had fairly limited impact on estimates of the medical home effect on process measures. Exhibit 12.10 shows similar patterns in the magnitude and direction of effects between Medical Home Effect 1 and 2 analyses.

Exhibit 12.10. Effect of NCQA Level 3 PCMH Recognition on Claims-Based Utilization and Process Measures Using Two Different Reference Categories

	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition Estimate (SE) (Medical Home Effect 1)			NCQA Level 3 PCMH Recognition vs. Received No Recognition Estimate (SE) (Medical Home Effect 2)		
Outcome	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Utilization Measures (per 1,000 beneficiaries per year) [a]						
FQHC visits	**83.33*** (13.67)**	**157.08*** (13.40)**	**154.26*** (11.97)**	**98.77*** (11.68)**	**186.53*** (11.41)**	**200.89*** (10.20)**
p-value	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
Non-FQHC PCP visits	–8.48 (12.40)	**–30.62* (14.00)**	**–39.62** (14.31)**	–10.61 (11.58)	**–1.85*** (13.20)**	**–62.02*** (13.35)**
p-value	0.494	**0.029**	**0.006**	0.359	**<0.001**	**<0.001**
PCP visits	**54.08** (16.57)**	**93.15*** (17.21)**	**43.26* (16.90)**	**60.42*** (14.20)**	**90.00*** (14.86)**	**62.94*** (14.61)**
p-value	**0.001**	**<0.001**	**0.010**	**<0.001**	**<0.001**	**<0.001**
Specialist visits	1.18 (14.58)	**–35.97* (16.27)**	–9.98 (15.49)	–17.18 (13.37)	**–44.64** (14.61)**	**–61.89*** (14.26)**
p-value	0.935	**0.027**	0.520	0.199	**0.002**	**<0.001**
ED visits	**16.66**†**	**22.55***	**29.45***	3.06	0.74	0.38

	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition Estimate (SE) (Medical Home Effect 1)			NCQA Level 3 PCMH Recognition vs. Received No Recognition Estimate (SE) (Medical Home Effect 2)		
Outcome	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
	(10.02)	**(9.50)**	**(8.91)**	(8.24)	(7.95)	(7.77)
p-value	**0.097**	**0.018**	**<0.001**	0.711	0.926	0.961
Outpatient-only ED visits	12.99 (8.88)	**18.52* (8.33)**	**23.77** (7.70)**	7.49 (7.28)	6.31 (7.11)	8.10 (6.73)
p-value	0.143	**0.026**	**0.002**	0.304	0.375	0.229
Inpatient admissions	–0.13 (3.78)	4.12 (3.43)	–2.91 (3.23)	**–6.98* (3.48)**	–3.69 (3.10)	**–10.35*** (3.04)**
p-value	0.973	0.230	0.368	**0.045**	0.234	**<0.001**
Inpatient ACSC admissions	0.33 (1.27)	–0.20 (1.35)	0.05 (1.10)	–0.70 (1.18)	–1.41 (1.18)	–1.05 (1.10)
p-value	0.794	0.885	0.962	0.553	0.234	0.340
Inpatient readmissions (percentage points)	0.10 (0.51)	–0.68 (0.53)	–0.65 (0.48)	0.44 (0.44)	0.19 (0.43)	-0.53 (0.43)
p-value	0.838	0.203	0.176	0.318	0.662	0.225
Process Measures (percentage points)						
All four recommended tests for patients with diabetes	**1.89*** (0.38)**	**1.58*** (0.36)**	**1.69*** (0.34)**	**1.72*** (0.35)**	**1.43*** (0.32)**	**1.45*** (0.32)**
p-value	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
HbA1c test	**1.67*** (0.43)**	0.68 (0.41)	**0.70† (0.38)**	**1.63*** (0.40)**	**0.86* (0.39)**	**0.82* (0.36)**
p-value	**<0.001**	0.102	**0.066**	**<0.001**	**0.028**	**0.024**
LDL test	0.48 (0.49)	0.16 (0.46)	**1.00* (0.46)**	0.21 (0.45)	–0.25 (0.42)	0.52 (0.41)
p-value	0.330	0.728	**0.029**	0.643	0.545	0.212
Eye exam	**1.84*** (0.50)**	**1.17* (0.47)**	**1.23** (0.46)**	**2.02*** (0.45)**	**1.50*** (0.42)**	**1.13** (0.42)**
p-value	**<0.001**	**0.012**	**0.007**	**<0.001**	**<0.001**	**0.007**
Nephropathy test	**2.62*** (0.55)**	**3.36*** (0.51)**	**2.62*** (0.49)**	**2.04*** (0.51)**	**2.47*** (0.46)**	**2.04*** (0.45)**
p-value	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**

	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition Estimate (SE) (Medical Home Effect 1)			NCQA Level 3 PCMH Recognition vs. Received No Recognition Estimate (SE) (Medical Home Effect 2)		
Outcome	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Lipid test for patients with ischemic vascular disease	–0.47 (0.69)	–0.64 (0.65)	–0.41 (0.66)	–0.22 (0.61)	–0.42 (0.58)	–0.12 (0.59)
p-value	0.490	0.320	0.535	0.723	0.468	0.838

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] FQHC visits included any visit to an FQHC regardless of provider specialty. PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission. Utilization estimates are per 1,000 beneficiaries per year), except readmissions which are percentage points.

Spending

Exhibit 12.11 shows large and statistically significant reductions in Medicare expenditures among beneficiaries attributed to sites that achieved NCQA Level 3 PCMH recognition compared with beneficiaries attributed to sites that received no recognition. NCQA-Level-3-recognized sites achieved reductions in total Medicare expenditures of approximately $270 per beneficiary by the third year of the demonstration. These changes were driven largely by reductions in inpatient spending ($202 lower spending per beneficiary in Year 3) and in noninstitutional provider spending ($62 lower spending per beneficiary in Year 3). For each of the four measures we examined, the spending reductions grew stronger between Year 1 and Year 3.

Exhibit 12.11. Effect of Level 3 PCMH Recognition on Claims-Based Spending Measures Using Two Different Reference Categories

	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Estimate (SE) (Medical Home Effect 1)			NCQA Level 3 PCMH Recognition vs. Received No Recognition Estimate (SE) (Medical Home Effect 2)		
Outcome Measure	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Total Medicare expenditures without care management fee	**–247.74* (103.32)**	–144.03 (89.15)	**–155.86† (86.13)**	**–216.33** (90.03)**	**–234.92** (83.09)**	**–272.85*** (82.89)**
p-value	**0.016**	0.106	**0.070**	**0.010**	**0.010**	**<0.001**

	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Estimate (SE) (Medical Home Effect 1)			NCQA Level 3 PCMH Recognition vs. Received No Recognition Estimate (SE) (Medical Home Effect 2)		
Outcome Measure	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Inpatient	**–184.85* (75.33)**	–52.02 (57.83)	–62.66 (55.17)	**–156.33* (63.65)**	**–150.04** (55.11)**	**–201.91*** (54.31)**
p-value	**0.014**	0.368	0.256	**0.014**	**0.006**	**<0.001**
Outpatient facility	–8.12 (32.05)	–14.83 (26.21)	–21.65 (24.62)	11.21 (24.45)	–23.89 (24.06)	–25.72 (23.73)
p-value	0.800	0.572	0.379	0.647	0.321	0.278
Part B expenditures [a]	**–45.85* (21.10)**	**–48.19** (17.98)**	–5.92 (16.14)	**–42.14* (17.16)**	**–60.85*** (16.21)**	**–62.07*** (16.41)**
p-value	**0.030**	**0.007**	0.714	**0.014**	**<0.001**	**<0.001**

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file including spending on laboratory, imaging, and physician services provided in ED settings

In summary, for utilization and process measures (see Exhibit 12.10) and for spending measures (see Exhibit 12.11) substantially stronger medical home effects were noted when NCQA-Level-3-PCMH-recognized sites were compared with sites that received no recognition (Medical Home Effect 2 analyses) than were seen in Medical Home Effect 1 analyses. These findings suggest that FQHCs that achieved NCQA Level 3 PCMH recognition were able to provide care consistent with CMS's goals of better access to primary care services at lower cost.

12.3. Results of Medical Home Effect Analysis 3

Medical Home Effect Analysis 3 sought to isolate the effect of recognition by examining outcomes for *comparison* FQHCs that achieved NCQA Level 3 PCMH recognition with outcomes for comparison FQHCs that received no recognition.

Medical Home Effect Analysis 3 went beyond Analysis 2 in isolating the effect of medical home recognition on beneficiary outcomes, examining the effect of such recognition *among comparison sites only*. We limited this analysis to comparison sites in order to distinguish the medical home effect from the demonstration effect. While both demonstration and comparison FQHCs that achieved NCQA Level 3 recognition were subject to time pressures consistent with undergoing medical home transformation, comparison sites that achieved recognition during the demonstration did so without the concomitant pressures of a *commitment* to achieve recognition within the demonstration's three-year timeline.[72] We believed that this analysis would provide a

[72] Please see Chapters Seven and Eight.

more unbiased estimate of the effect of NCQA Level 3 PCMH recognition. Exhibit 12.12 describes the features of Medical Home Effect Analysis 3 in comparison to the earlier two analyses.

Exhibit 12.12. Description of Medical Home Effect Analyses 1, 2, and 3

Analysis Type	Inclusion/Exclusion Criteria		Medical Home Effect Specification		Reference Group Specification	
	Included FQHCs	Excluded FQHCs	FQHC Characteristic	N	FQHC Characteristic	N
Medical Home Effect 1	1,330 FQHCs, including both demonstration and comparison FQHCs	None	All demonstration and comparison FQHCs that achieved NCQA Level 3 PCMH recognition	445	All FQHCs with a type of recognition other than NCQA Level 3 PCMH[a] and All FQHCs that received no medical home recognition	885
Medical Home Effect 2	1,046 FQHCs, including both demonstration and comparison FQHCs	284 FQHCs, including both demonstration and comparison FQHCs, with a type of recognition other than NCQA Level 3 PCMH[a]	All demonstration and comparison FQHCs that achieved NCQA Level 3 recognition	445	All demonstration and comparison FQHCs that received no medical home recognition	601
Medical Home Effect 3	613 FQHCs, including only comparison FQHCs	All 503 demonstration FQHCs All 214 comparison FQHCs with a type of recognition other than NCQA Level 3 PCMH[a]	All comparison FQHCs that achieved NCQA Level 3 recognition	94	All comparison FQHCs that received no recognition	519

[a] Excluded FQHCs include those with any of the following types of medical home recognition: NCQA Level 1 or 2, AAAHC, Joint Commission, and state-based recognition.

Exhibit 12.13 shows results for all three categories of utilization, process, and spending. There are two caveats to these results. First, comparison sites might have been fundamentally different from demonstration sites in their readiness to embrace practice transformation or their

ability to access resources supporting transformation. As a result, selection-maturation bias might explain some of the effects of recognition presented in this chapter. Second, because of the smaller analytic sample size when we include only comparison FQHCs, many estimates are relatively imprecise. Exhibit 12.13 shows that comparison FQHCs that achieved NCQA Level 3 recognition were associated with statistically significant changes in many measures of utilization and spending across Years 1, 2, and 3, with a steadily increasing effect across the years for many measures.

Comparison sites that achieved NCQA Level 3 PCMH recognition by the end of the three-year demonstration period were associated with improvements in ambulatory utilization compared to sites that did not achieve any recognition. FQHC visits and total PCP visits increased steadily each year, culminating in a Year 3 increase of 208 additional FQHC visits per 1,000 beneficiaries per year and an additional 123 PCP visits per 1,000 beneficiaries per year for those receiving care at NCQA-Level-3-recognized comparison FQHCs relative to those receiving care at comparison FQHCs that received no recognition. At the same time, beneficiaries receiving care at NCQA-Level-3-recognized comparison sites used both specialists and outside primary care providers at lower rates and had fewer total admissions than did beneficiaries at sites achieving no recognition. This suggests that both increases in primary care and greater centralization of primary care within the FQHC might offset use of specialty care over time.

Comparison FQHCs with NCQA Level 3 PCMH recognition were associated with a higher quality of diabetes care in Years 2 and 3 based on the composite measure of four tests. These sites also experienced greater rates of eye exams across all three years relative to comparison sites with no recognition. We observed lower rates of LDL and HbA1c testing for one year only at NCQA-Level 3-recognized comparison sites. There were also higher levels of nephropathy tests and lower levels of lipid tests for patients with ischemic vascular disease for only one year. The mixed direction of results among individual diabetes measures may have contributed to the diminishing level of improvement for the composite diabetes measure from Year 2 to Year 3.

NCQA-Level-3-recognized comparison sites were also associated with substantial reductions in total Medicare expenditures, inpatient spending, and noninstitutional provider spending relative to comparison sites that received no recognition. The magnitude of the medical home effect increased consistently in each of the three years. By the end of the demonstration's third year, NCQA-Level-3-recognized comparison sites had achieved reductions of $434 per beneficiary in total Medicare expenditures, $280 per beneficiary in inpatient spending, and $118 per beneficiary in noninstitutional provider spending.

Exhibit 12.13. Among Comparison FQHCs Only, Effect of NCQA Level 3 PCMH Recognition vs. No Recognition on Utilization, Process, and Spending

	Year 1		Year 2		Year 3	
Outcome Measure	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**	**Estimate (SE)**	**p-value**
Utilization Measures[a]						
FQHC visits	**72.38*** (18.83)**	**<0.001**	**160.06*** (18.11)**	**<0.001**	**207.83*** (15.84)**	**<0.001**
Non-FQHC PCP visits	20.48 (18.46)	0.267	–7.53 (20.82)	0.717	**–46.82* (21.54)**	**0.030**
PCP visits	**57.54* (22.84)**	**0.012**	**109.01*** (23.74)**	**<0.001**	**122.73*** (22.71)**	**<0.001**
Specialist visits	–29.88 (21.64)	0.167	**–42.95† (23.22)**	**0.064**	**–76.69*** (22.99)**	**<0.001**
Total ED visits	–13.33 (12.69)	0.293	3.89 (12.41)	0.754	–2.85 (12.07)	0.813
Outpatient-only ED visits	–11.37 (11.18)	0.309	1.37 (10.86)	0.899	–0.24 (10.55)	0.982
Inpatient admissions	–4.18 (5.38)	0.438	–5.11 (4.96)	0.303	**–9.55† (4.90)**	**0.051**
Inpatient ACSC admissions	–1.17 (1.85)	0.527	–1.03 (1.74)	0.555	–0.67 (1.75)	0.701
Inpatient readmissions	0.00 (0.70)	1.000	-0.07 (0.69)	0.923	–0.84 (0.70)	0.229
Process Measures (percentage points)						
All four recommended tests for patients with diabetes	0.77 (0.59)	0.189	**1.49** (0.53)**	**0.005**	**1.18* (0.51)**	**0.021**
HbA1c test	–0.45 (0.58)	0.437	–0.84 (0.57)	0.144	**–1.07* (0.53)**	**0.045**
LDL test	**–1.53* (0.69)**	**0.027**	–0.27 (0.67)	0.693	0.04 (0.65)	0.947
Eye exam	**1.51* (0.73)**	**0.040**	**2.34*** (0.68)**	**<0.001**	**2.18*** (0.66)**	**<0.001**
Nephropathy test	0.01 (0.81)	0.990	**1.42† (0.74)**	**0.054**	1.00 (0.71)	0.160
Lipid test for patients with ischemic vascular disease	**–1.78† (0.98)**	**0.069**	–0.15 (0.95)	0.871	0.22 (0.95)	0.815
Spending (per beneficiary per year in dollars)						
Total Medicare expenditures without care management fees	**–277.54* (138.68)**	**0.045**	**–327.25* (132.16)**	**0.013**	**–434.12*** (130.77)**	**<0.001**
Inpatient expenditures	–159.38 (97.15)	0.101	**–227.93** (87.89)**	**0.010**	**–279.57*** (-84.89)**	**<0.001**
Part B expenditures [b]	**–74.00** (28.16)**	**0.009**	**–105.03*** (27.37)**	**<0.001**	**–118.17*** (24.87)**	**<0.001**

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014)

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] FQHC visits included any visit to an FQHC regardless of provider specialty. PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to

specialists at primary care clinics are identified by E&M visit codes. Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission.
[b] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file including spending on laboratory, imaging, and physician services provided in ED settings.

12.4. Comparison of Results from Three Medical Home Effect Analyses

Across all three analyses, we found much stronger effects on beneficiary outcomes from looking at sites that achieved NCQA Level 3 PCMH recognition than we found when looking at demonstration sites only (Chapters Nine and Ten). Exhibit 12.14 compares results for the demonstration effect with results for all three medical home effect analyses.

Medical home recognition affected beneficiary utilization, processes, and outcomes, although the effect sizes differed by cohort and reference group (analytic comparison group). For each outcome shown, Exhibit 12.14 shows a steady increase in the number of statistically significant outcomes as we move from left to right across the table. The demonstration effect analysis (first column) had the weakest effect on patient outcomes. We attribute this to: (1) the late start of the demonstration's TA, (2) substantial exposure of comparison sites to external funding and TA similar to that available to demonstration sites, and (3) the fact that the demonstration group included both recognized and not recognized sites.

Compared with the demonstration effect analysis, we see a stronger impact with Medical Home Effect Analysis 1 when we regrouped the 1,330 FQHCs according to whether they did or did not achieve NCQA Level 3 PCMH recognition by the end of the demonstration. This analysis showed some total cost savings, but appeared to underestimate the effect of achieving NCQA Level 3 recognition by including in the reference group FQHCs that may have achieved other forms of PCMH recognition and those that received no recognition at all.

With Medical Home Effect Analysis 2, we compared beneficiary outcomes for sites that achieved NCQA Level 3 PCMH recognition to outcomes for sites that received no recognition, removing from the analysis FQHCs that achieve NCQA Level 1 or 2 or those that achieve other types of recognition (i.e., Joint Commission, AAAHC, or state-based). This analysis found a decrease in hospital admissions and in inpatient spending, as well as strong total cost savings of $271 per beneficiary per year.

Exhibit 12.14 also shows stronger effect sizes for Year 3 than for Year 2 and Year 1. This is consistent with our hypothesis that structural changes within FQHCs that have achieved medical home recognition take time to have effects on patients. Demonstrating the increasing effect size by year supports the qualitative evaluation findings highlighting the many years required to document medical home effects on beneficiary outcomes.

With Medical Home Effect Analysis 3, we see an even stronger medical home effect after we refined the analysis to compare beneficiaries attributed to NCQA Level 3-recognized comparison FQHCs to beneficiaries attributed to comparison FQHCs with no recognition. This sequence of analyses reveals a set of medical home effects that are associated with CMS's goals of better access, better care, and better health with lower costs. As shown in Exhibit 12.14, utilization

among beneficiaries attributed to FQHCs that achieved recognition during the three-year demonstration was more consistent with CMS's goals for access than was utilization among beneficiaries attributed to FQHCs not achieving recognition. CMS's goals include better access to ambulatory services, which we see with marked increases in FQHC visits across the three demonstration years, especially for recognized FQHCs. Similarly, we see evidence for fewer ED visits and a trend toward fewer hospital stays among recognized sites (noted with Medical Home Effect Analyses 2 and 3). We also see improved diabetes processes and lower costs for beneficiaries attributed to FQHCs that achieve recognition relative to those that do.

The consistency of effects across these three related analyses provides strong evidence that the medical home model leads to improved beneficiary outcomes. Nevertheless, we cannot rule out the possibility that FQHCs that achieved NCQA Level 3 PCMH recognition differ systematically from FQHCs that did not achieve such recognition. Thus, while these results suggest that medical homes are associated with large improvements in performance on CMS's triple aim of better care, better health, and lower costs, we cannot rule out the possibility that other factors correlated with medical home recognition may be responsible for these effects.

Exhibit 12.14. Effect of NCQA Level 3 Recognition on Utilization, Spending, and Beneficiary Experience Measures

Analyses Type	Demo Effect			Medical Home Effect 1			Medical Home Effect 2			Medical Home Effect 3		
Comparison	**Demonstration vs. Comparison FQHC Estimate**			**NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition Estimate**			**NCQA Level 3 vs. Received No Recognition Estimate**			**NCQA Level 3 Recognition vs. Received No Recognition Estimate**		
Cohort Includes:	**All Demonstration (503) & All Comparison (827) FQHCs**			**All NCQA Level 3 (445) & All Not Level 3 (885) Recognized FQHCs**			**All NCQA Level 3 (445) & All Not-Recognized (601) FQHCs**			**Only Comparison NCQA Level 3 FQHCs (94) & Not-Recognized (519) FQHCs**		
	Year 1	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
UTILIZATION [a]												
FQHC visits	**49.66*****	**97.17*****	**105.19*****	**83.33*****	**157.08*****	**154.26*****	**98.77*****	**186.53*****	**200.89****	**72.38*****	**160.06*****	**207.83*****
Non-FQHC PCP visits	–8.28	–11.49	13.75	–8.48	**–30.62***	**–39.62****	–10.61	**–61.85*****	**–62.02*****	20.48	–7.53	**–46.82***
Total PCP visits	**39.09***	**63.00*****	**78.71*****	**54.08****	**93.15*****	**43.26***	**60.42*****	**90.00*****	**62.94*****	**57.54***	**109.01*****	**122.73*****
Specialist visits	10.70	–5.83	–3.54	1.18	**–35.97***	–9.98	–17.18	**–44.64****	**–61.89*****	-29.88	**–42.95**†	**–76.69*****
Total ED visits	**23.47****	**26.10****	**31.38*****	**16.66**†	**22.55***	**29.45*****	3.06	0.74	0.38	**–**13.33	3.89	–2.85
Outpatient-only ED visits	**21.01****	**24.48****	**32.66*****	12.99	**18.52***	**23.77****	7.49	6.31	8.10	**–**11.37	1.37	**–**0.24
Inpatient admissions	4.67	**6.83***	2.72	–0.13	4.12	–2.91	**–6.98***	–3.69	**–10.35*****	**–**4.18	**–**5.11	**–**9.55†
Inpatient ACSC admissions	1.05	0.85	–1.12	0.33	–0.20	0.05	–0.70	–1.41	–1.05	**–**1.17	**–**1.03	**–**0.67
Inpatient readmissions	0.06	–0.76	–0.44	0.10	–0.68	–0.65	0.44	0.19	–0.53	0.00	–0.07	–0.84
PROCESS (percentage points)												
All four recommended diabetes tests	**1.39*****	0.22	0.45	**1.89*****	**1.58*****	**1.69*****	**1.72*****	**1.43*****	**1.45*****	0.77	**1.49****	**1.18***
HbA1c test	0.18	**–0.73**†	0.54	**1.67*****	0.68	**0.70**†	**1.63*****	**0.86***	**0.82***	–0.45	–0.84	**–1.07***
LDL test	0.51	–0.33	–0.12	0.48	0.16	**1.00***	0.21	–0.25	0.52	**–1.53***	–0.27	0.04
Eye exam	**1.97*****	**0.91**†	0.46	**1.84*****	**1.17***	**1.23****	**2.02*****	**1.50*****	**1.13****	**1.51***	**2.34*****	**2.18*****
Nephropathy test	**1.57****	**1.14***	**2.10*****	**2.62*****	**3.36*****	**2.62*****	**2.04*****	**2.47*****	**2.04*****	0.01	**1.42**†	1.00

Analyses Type:	Demo Effect			Medical Home Effect 1			Medical Home Effect 2			Medical Home Effect 3		
Comparison:	**Demonstration vs. Comparison FQHC Estimate**			**NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition Estimate**			**NCQA Level 3 vs. Received No Recognition Estimate**			**NCQA Level 3 Recognition vs. Received No Recognition Estimate**		
Cohort Includes:	**All Demonstration (503) & All Comparison (827) FQHCs**			**All NCQA Level 3 (445) & All Not Level 3 (885) Recognized FQHCs**			**All NCQA Level 3 (445) & All Not-Recognized (601) FQHCs**			**Only Comparison NCQA Level 3 FQHCs (94) & Not-Recognized (519) FQHCs**		
Lipid test for patients with ischemic vascular disease	–0.24	–0.76	–0.57	–0.47	–0.64	–0.41	–0.22	–0.42	–0.12	–1.78†	-0.15	0.22
SPENDING (dollars per beneficiary per year) [b]												
Total Medicare expenditures without care management fees	35.78	75.49	**162.86†**	**–247.74***	–144.03	**–155.86†**	**–232.90****	**–216.33****	**–272.85*****	**–277.54***	**–327.25***	**–434.12*****
Inpatient spending	–31.48	80.44	77.56	**–184.85***	–52.02	–62.66	**–156.33***	**–150.04****	**–201.91*****	–159.38	**–227.93****	**–279.57*****
Part B expenditures[c]	–2.70	23.49	**61.87*****	**–45.85***	**–48.19****	**–**5.92	**–42.14***	**–60.85*****	**–62.07*****	**–74.00****	**–105.03*****	**–118.17*****

SOURCE: RAND analysis of CMS's TAP file claims (2010-2013) and of RAND's beneficiary survey results.

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] FQHC visits included any visit to an FQHC regardless of provider specialty. Total PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Total specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to specialists at primary care clinics are identified by E&M visit codes. Utilization results are reported per 1,000 beneficiaries. FQHC visits included any visit to FQHCs regardless of provider specialty. Total PCP visits and total specialist visits included both visits to FQHCs and E&M visits to non-FQHCs. PCP visits include visits to primary care physicians, nurse practitioners, and physician assistants. Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission.

[b] Spending results are reported as per beneficiary per year ($).

[c] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file including spending on laboratory, imaging, and physician services provided in ED settings.

12.5. Chapter Summary and Conclusion

- Overall, we found stronger effects on patient outcomes from medical home recognition than we found for participation in the demonstration.
- Compared to our three medical home analyses, the demonstration effect analysis showed the weakest impact. We attribute this to: (a) the late start of the demonstration's interventions, (b) substantial exposure of comparison sites to external funding and TA similar to that available to demonstration sites, and (c) the fact that medical home recognition appeared to be only one of the key factors affecting beneficiary outcomes.
- Compared to the demonstration effect analysis, we saw a stronger impact with Medical Home Effect Analysis 1 when we regrouped the 1,330 FQHCs according to whether or not they achieved recognition by the end of the demonstration. Relative to sites that did not achieve NCQA Level 3 recognition, sites with such recognition were associated with substantially larger increases in non-ED ambulatory utilization, higher rates of visits to primary care physicians, fewer visits to non-FQHC primary care physicians and specialists, better performance on most diabetes process measures, and an increase in ED visits.
- In Medical Home Effect Analysis 1, we began to see some total cost savings. Regarding total Medicare expenditures, we found that NCQA-Level-3-recognized FQHCs achieved reductions of $248 per beneficiary in Year 1 of the demonstration and reductions of $156 in Year 3 of the demonstration relative to sites that did not achieve NCQA Level 3 recognition. However, Medical Home Effect Analysis 1 appeared to underestimate the effect of medical home recognition on patient outcomes by including in the reference group both FQHCs that did not achieve NCQA Level 3 PCMH recognition (but may have achieved other forms of recognition) and those that received no recognition at all.
- With Medical Home Effect Analysis 2, we omitted from the reference group FQHCs that achieved recognition other than NCQA Level 3 PCMH recognition so that the analysis could compare outcomes for sites that achieved NCQA Level 3 recognition to outcomes for sites that received no recognition. Here we saw a decrease in hospital admissions and in inpatient spending among sites that achieved NCQA Level 3 recognition, as well as strong total cost savings of $271 per beneficiary per year, relative to sites that received no recognition. Also of note, we saw stronger effects over time, consistent with our hypothesis that changes in clinics resulting from medical home recognition take time to reveal impacts on patients.
- With Medical Home Effect Analysis 3, we saw an even stronger medical home effect as we refined the analysis to compare outcomes for beneficiaries attributed to NCQA-Level-3-recognized FQHCs to outcomes for beneficiaries attributed to FQHCs that received no recognition. This analysis was restricted to comparison FQHCs to avoid confounding the medical home effect with a time pressure effect related to the commitment of demonstration FQHCs to achieve recognition during the demonstration's three-year window. Comparison FQHCs that achieved NCQA Level 3 recognition were associated

with statistically significant changes in many measures of utilization and spending across Years 1, 2, and 3, with a steadily increasing effect noted pattern across the years for many measures.

- The results presented in this chapter should be interpreted with one important caveat in mind. Although we adjusted for observed and unobserved differences between sites that achieved NCQA Level 3 PCMH recognition and those that did not, this design was unable to adjust for any unobserved differences between both types of sites that may have led to differential trends over time in beneficiary outcomes.

In the next chapter we will extend our analyses of the effect of medical home recognition by the medical home effect on beneficiary experience.

13. The Effects of Medical Home Recognition on Beneficiary-Reported Experiences

While Chapter Twelve considered the effect of medical home recognition on beneficiary utilization, process, and spending, this chapter focuses on the effect of medical home recognition on beneficiary experience. This chapter also serves as a follow-up to Chapter Ten, which showed the demonstration had a limited effect on beneficiary experience. We considered the demonstration effect results in light of evidence for a slow-to-start set of TA interventions for demonstration FQHCs, paired with evidence for substantial exposure of comparison FQHCs to external funding and TA. We concluded that these effects could make it difficult to see the effect of the demonstration on patient outcomes. We therefore expanded our analysis to examine the effect of medical home recognition on outcomes for beneficiary experience.[73]

In analyses in this chapter, we use the same three reference groups as in Chapter Twelve. In Medical Home Effect Analyses 1 and 2, we compared outcomes for all FQHCs that achieved NCQA Level 3 PCMH recognition (whether from the demonstration or comparison group) with outcomes, respectively, for (a) sites that did not achieve NCQA Level 3 PCMH recognition, and (b) sites that received no recognition at all. In Medical Home Effect Analysis 3, we focused only on comparison sites, examining outcomes for beneficiaries attributed to comparison FQHCs that achieved NCQA Level 3 PCMH recognition with outcomes for beneficiaries attributed to comparison FQHCs that received no recognition.

As with the analyses in Chapter Twelve, the analyses in this chapter used a medical home difference-in-differences analysis, which is applied to the same longitudinal survey data used in the analyses in Chapter Eleven. In this chapter, we report only significant medical home effect results for NCQA Level 3 PCMH recognition. Appendix N presents the complete set of findings for beneficiary experience medical home effect, including those with and without significant results, and defines all beneficiary survey scales referred to in this chapter.

We describe the methods associated with the development, fielding, and analysis of the beneficiary survey in Appendix D. In summary, as with the analyses presented in Chapter Ten, we use logistic regression for binary items and linear regression for all scale scores. Each analysis incorporated sampling weights, non-response weights, propensity score weights to balance demonstration and comparison groups, site-level clustering, and Huber-White adjusted standard errors. Logistic regression estimates are reported on their natural scales using an estimator developed by Puhani.

13.1. Improved Beneficiary Experiences Associated with the Medical Home Effect

Exhibit 13.1 shows results in which FQHCs that achieved NCQA Level 3 PCMH recognition

[73] Difference-in-differences medical home analyses using beneficiary survey data in this chapter are consistent with difference-in-differences medical home analyses using claims shown in Chapter Twelve.

showed statistically significant improvements relative to the reference groups (analytic comparison groups), respectively, for Medical Home Effect Analyses 1, 2, and 3. The number of beneficiaries in the unweighted sample, and the difference-in-differences estimate and p-value are shown for each item.

Beneficiaries attributed to FQHCs that achieved NCQA Level 3 PCMH recognition experienced improved outcomes relative to beneficiaries attributed to FQHCs that did not achieve NCQA Level 3 recognition or that received no recognition as reported in at least one of the three Medical Home Effect Analyses 1,2, or 3. Examples included beneficiary-reported receipt of:

- timely care (e.g., getting answers to medical questions the same day after phoning the provider's office during office hours);
- evidence-based care (e.g., provider attention to patient's mental or emotional health);
- communication from providers (e.g., providers giving easy to understand information about health questions);
- follow-up on test results;
- more effective participation in decisionmaking (e.g., about medication use);
- support for taking care of their own health (e.g., by the provider asking about health goals and things that make it hard to care for their health);
- post hospital discharge contact (e.g., visit or call) during the two weeks that followed hospital stays; and
- cultural competence by their provider.

Exhibit 13.1. Improved Beneficiary Experiences Associated with Medical Home Effect

Survey Item	Total N Unweighted[a]	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition (Medical Home Effect 1) Difference-in-Differences Estimate[b]	p-value	NCQA Level 3 PCMH Recognition vs. Received No Recognition (Medical Home Effect 2) Difference-in-Differences Estimate[b]	p-value	NCQA Level 3 Recognition vs. Received No Recognition (Comparison only) (Medical Home Effect 3) Difference-in-Differences Estimate[b]	p-value
Timeliness and Access							
Timeliness							
Usually or always in the last 12 months, when you phoned provider's office during regular office hours, get an answer to your medical question that same day	1,843	**0.080***	**0.034**	**0.083†**	**0.062**	**0.165***	**0.026**
Evidence-Based Care							
CAHPS PCMH: Providers Pay Attention to Your Mental or Emotional Health							
Within the last 12 months, among patients with moderate or severe mental health concerns, provider's office talked about a personal, family, substance abuse, or mental health/ emotional problem	913	0.076	0.135	**0.115***	**0.043**	0.052	0.550
CG-CAHPS: How Well Providers Communicate with Patients [c]							
Provider *usually or always* gave you easy to understand information about these health questions or concerns	4,273	-0.010	0.574	-0.004	0.833	**0.051†**	**0.087**
Provider Follow-up on Test Results							
When provider ordered a blood test, x-ray, or other test for you, someone from this provider's office *always* follows up to give you those results	4,796	**0.047†**	**0.074**	0.038	0.195	0.082	0.130
Effective Participation in Decisionmaking							
Provider *usually or always* talked about the reasons you might want to take a medicine	2,382	**0.046****	**0.008**	**0.045***	**0.032**	0.038	0.238

Survey Item	Total N Unweighted[a]	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 Recognition (Medical Home Effect 1) Difference-in-Differences Estimate[b]	p-value	NCQA Level 3 PCMH Recognition vs. Received No Recognition (Medical Home Effect 2) Difference-in-Differences Estimate[b]	p-value	NCQA Level 3 Recognition vs. Received No Recognition (Comparison only) (Medical Home Effect 3) Difference-in-Differences Estimate[b]	p-value
Provider *usually or always* talked about the reasons you might not want to take a medicine?	2,362	**0.074***	**0.034**	**0.074†**	**0.070**	0.046	0.492
CAHPS PCMH: Providers Support You in Taking Care of Your Own Health							
Did anyone in provider's office talk with you about specific goals for your health?	6,400	0.017	0.553	0.024	0.415	**0.122***	**0.018**
Did anyone in provider's office ask you if there are things that make it hard for you to take care of your health?	6,367	**0.042†**	**0.097**	**0.056***	**0.045**	0.022	0.663
Coordination of Care and Ancillary Services							
Coordination of Care Around Hospitalization							
After hospitalization, received visit (but no call) from this provider	243	**0.186***	**0.046**	0.173	0.105	**0.159*****	**<0.001**
After hospitalization, received visit OR call from this provider [d]	615	**0.153***	**0.047**	0.110	0.241	0.047	0.749
After hospitalization, received visit AND call from this provider [d]	410	0.134	0.213	0.078	0.519	-0.004	0.981
After hospitalization, received call ONLY from this provider [d]	607	0.107	0.241	0.077	0.475	0.082	0.554
After hospitalization, received visit ONLY from this provider [d]	607	**0.084†**	**0.098**	0.094	0.139	0.015	0.728
Cultural Competence							
Never treated unfairly because you did not speak English very well	856	**0.098†**	**0.067**	0.088	0.198	0.106	0.112

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] Sample size for each survey question (i.e., for each row in the table) varies based on survey version. The beneficiary survey had four versions. Across these versions, 75 percent of items were core items that were repeated across each survey version. However, the noncore questions varied so only 25 percent of the sample had the option to complete the version-specific questions. Additionally, row-specific sample sizes vary because of clinically detailed skip patterns that varied the cohort for survey questions. Finally, these analyses include survey responses from beneficiaries who report data at two points in time. The sample size presented is only for Medical Home Effect

Analysis 1. Also note that for this exhibit, the sample size for the Medical Home Effect 2 column (middle two columns) is reduced because the reference group includes only sites with No Recognition. Additionally, note that the sample size for the Medical Home Effect 3 column (last two columns) is reduced even further because these analyses are limited to comparison sites only, with the reference group including only comparison sites with No Recognition.
[b] p-values from multivariable logistic or linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the groups with and without recognition. Estimate presented is the interaction between recognition status and time.
[c] Scale items are defined in Appendix D.
[d] Based on cohort-level analyses. Person-level analyses include only those with valid responses at both baseline and follow-up. Because these restrict the sample size and interpretation of the results, for some variables we also conducted “cohort-level” analyses, including those with a valid response at either baseline or follow-up.

(This page intentionally left blank.)

13.2. Worsened Beneficiary Experiences Associated with the Medical Home Effect

Exhibit 13.2 shows that beneficiaries attributed to FQHCs that achieved NCQA Level 3 PCMH experienced worse performance relative to beneficiaries attributed to FQHCs that did not achieve NCLQ Level 3 recognition or that received no recognition in at least one of the three Medical Home Effect Analyses 1,2 , or 3:

- getting an appointment to see a specialist, when needed
- rating primary care and specialist providers
- reporting clerks and receptionists treated them with courtesy and respect
- reporting providers showed respect and explained things in a way that was easy to understand

The poorer performance for NCQA-Level-3-recognized FQHCs in the areas of accessing specialty appointments relative to the reference groups (analytic comparison groups) may reflect challenges faced by the clinic in ensuring timely access to care while serving an increasing number of beneficiaries and managing a growing number of visits per beneficiary.

Beneficiaries attributed to FQHCs that achieved NCQA Level 3 PCMH recognition were also less likely than beneficiaries attributed to FQHCs that received no recognition to assign a rating of ten points on a ten-point scale to both their primary care providers and to their specialists. Additionally, we see a decrease in reports of clerks and receptionists treating them with respect among beneficiaries attributed to FQHCs that achieved NCQA Level 3 recognition compared with those attributed to FQHCs that received no recognition. Over time, beneficiaries attributed to NCQA-Level-3-recognized FQHCs also reported less “easy” communication with their providers compared with beneficiaries attributed to other FQHCs.

Exhibit 13.2. Worsened Beneficiary Experiences Associated with Medical Home Effect

Survey Item	Total N Unweighted[a]	NCQA Level 3 PCMH Recognition vs. Did Not Achieve NCQA Level 3 PCMH Recognition (Medical Home Effect 1)		NCQA Level 3 PCMH Recognition vs. Received No Recognition (Medical Home Effect 2)		NCQA Level 3 PCMH Recognition vs. Received No Recognition (Comparison only) (Medical Home Effect 3)	
		Difference-in-Differences Estimate [b]	p-value	Difference-in-Differences Estimate [b]	p-value	Difference-in-Differences Estimate [b]	p-value
Loyalty, Continuity							
Access							
Within the last 12 months, among those who tried to make an appointment to see a specialist: It was *always* easy to get an appointment	742	-0.066	0.381	**-0.136†**	**0.089**	-0.006	0.960
Beneficiary Experience Ratings and Reports							
Beneficiary ratings of providers							
Rated primary care provider 10 on a 10-point scale	6,396	-0.028	0.225	**-0.054***	**0.031**	-0.046	0.290
Rated specialist 10 on a 10-point scale	742	-0.111	0.118	**-0.176***	**0.014**	**-0.257***	**0.037**
Beneficiary ratings of clerks/ receptionists							
Clerks and receptionists *always* treated you with courtesy and respect	6,598	-0.029	0.120	**-0.037†**	**0.051**	-0.043	0.167
CG-CAHPS: How Well Providers Communicate with Patients [c]							
Provider *usually or always* showed respect for what you had to say?	6,621	**-0.037****	**0.005**	-0.022	0.114	0.000	0.991
Provider *usually or always* explained things in a way that was easy to understand	6,559	**-0.026†**	**0.059**	**-0.033***	**0.035**	-0.008	0.760

SOURCE: RAND analysis of the RAND Medicare Beneficiary Survey Data (2014–2016).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] Sample size for each survey question (i.e., for each row in the table) varies based on survey version. The beneficiary survey had four versions. Across these

versions, 75 percent of items were core items that were repeated across each survey version. However, the noncore questions varied so only 25 percent of the sample had the option to complete the version-specific questions. Additionally, row-specific sample sizes vary because of clinically detailed skip patterns that varied the cohort for survey questions. Finally, these analyses include survey responses from beneficiaries who report data at two points in time. The sample size presented is only for Medical Home Effect Analysis 1.

[b] p-values from multivariable logistic or linear regression adjusting for baseline beneficiary- and site-level covariates. Analyses are weighted with survey weights (sampling design and nonresponse) and propensity score weights to balance the groups with and without recognition. Estimate presented is the interaction between recognition status and time.

[c] Scale items are defined in Appendix D.

(This page intentionally left blank.)

The same caveat noted in Chapter Twelve applies to the interpretation of these results here. While we adjusted for observed and unobserved differences between sites that achieved NCQA Level 3 PCMH recognition and those that did not, we were unable to adjust for any unobserved differences that may have led to differential trends over time in beneficiary outcomes.

13.3. Chapter Summary and Conclusion

Our analyses of the medical home effect on beneficiary experience found mixed results:

- The analyses showed improved outcomes over time for beneficiaries attributed to FQHCs that achieved NCQA Level 3 recognition relative to those attributed to sites that did not achieve NCQA Level 3 recognition or that received no recognition for one or more of the three Medical Home Effect analyses in the following areas:
  - receipt of answers to medical questions the same day after phoning the provider's office during office hours
  - evidence-based care (e.g., provider attention to patient's mental or emotional health)
  - communication from providers (e.g., providers giving easy to understand information about health questions)
  - follow-up on test results.
  - providers effectively participated with them in decisionmaking (e.g., medication use)
  - providers supported their health literacy (e.g., discussed things that makes it hard to care for health)
  - providers had contact (e.g., visit or call) between patients and providers during the two-weeks that followed hospital stays
  - demonstrated cultural competence.
- Beneficiaries attributed to sites that achieved NCQA Level 3 recognition also experienced worse performance relative to those attributed to sites that did not achieve NCQA Level 3 recognition or that received no recognition for one or more of three Medical Home Effect analyses in several areas:
  - ease of getting an appointment to see a specialist
  - beneficiary ratings of primary and specialty providers
  - report of clerks and receptionists treating them with courtesy and respect
  - reporting providers showed respect and explained things in a way that was easy to understand

These mixed beneficiary experiences suggest that medical home recognition was associated with many positive effects on beneficiary outcomes. The improvements in timeliness, evidence-based care, and coordination of care is consistent with the underlying principles of the PCMH. However, the results also showed a weakening link between beneficiaries attributed to FQHCs with NCQA Level 3 recognition and providers with respect to access to specialty care,

beneficiaries' worsening ratings of providers; increased reports of less-respectful treatment from clerks, receptionists, and providers; and less-favorable experiences regarding receipt of health literacy information from their providers and regarding shared information between primary care and specialty providers.

We also found mixed results in our analyses of the demonstration effect on patient experience (Chapter Ten). In some areas, demonstration beneficiaries experienced improved performance over time relative to comparison beneficiaries (e.g., receiving timely answers to medical questions phoned in during regular office hours, getting appointments as soon as needed for care needed right away) while in other areas demonstration beneficiaries experienced worse performance relative to comparison beneficiaries (e.g., being treated with courtesy and respect by clerks and receptionists, receiving information about what to do if their health condition got worse). Taken together, the findings presented in both Chapter Ten and Chapter Thirteen suggest that the challenges and burdens associated with achieving recognition can have mixed effects on beneficiary experiences, including both better outcomes and also unintended consequences. These issues are discussed further in Chapter Fifteen.

14. The Effect of Alternative PCMH Recognition Types on Claims-Based Outcomes

In this chapter we conclude our examination of the medical home effect by focusing on the extent to which alternative types of recognition (i.e., NCQA Levels 1 and 2 PCMH recognition as well as recognition from AAAHC, Joint Commission, or individual states) have comparable effects on beneficiary outcomes. Additional information about the requirements for each of these programs can be found in Appendix A1.

In the previous two chapters, we reported the findings of three different medical home effect analyses. In this chapter, we limit the analysis to comparison FQHCs and apply Medical Home Effect Analysis 3, comparing outcomes for comparison FQHCs that achieved NCQA Level 3 PCMH recognition with outcomes for comparison FQHCs that received no recognition. We do this in an effort to isolate the effect of medical home recognition without possible confounding by time pressure on demonstration sites to achieve medical home recognition within the three-year demonstration period.

In this chapter, we examine the effects of two different types of medical home recognition.[74] First, we look at the effect of different *levels* of NCQA PCMH recognition (Levels 1, 2, 3) on beneficiary outcomes. We then look at the impact of alternative PCMH recognition programs on beneficiary outcomes. These analyses answered two primary questions. First, the former analysis was designed to detect a "dose-response" effect, which represents a rigorous test of the PCMH model as a strategy for improving outcomes. We asked whether NCQA Level 3 PCMH recognition (a "higher dose" of recognition) was associated with a stronger medical home effect ("response") than observed with NCQA Level 2 or NCQA Level 1 ("lower dose") recognition. Second, we examined alternative recognition programs to understand whether different programs had different effects on beneficiary outcomes. If we found that different types of PCMH recognition programs produced the same results, we would be able to pool outcomes from comparable programs in order to develop more precise estimates of the effect of PCMH recognition. Alternatively, if we found that different types of PCMH recognition programs produced differing effects, we might recommend further study of the differences in effects, even beyond this FQHC-specific evaluation, given the substantial financial and operational costs of using these recognition programs to measure progress toward PCMH transformation. CMS and other stakeholders will want to know whether different recognition programs produce similar outcomes for beneficiaries.

[74] All analyses in Chapter Fourteen use Medical Home Effect Analysis 3 as described in Chapter Twelve, Section 12.3 and Exhibits 12.1 and 12.9.

We begin this chapter by examining the relative impact, respectively, of NCQA Levels 3, 2, and 1 PCMH recognition on beneficiary outcomes. We then show results of our analysis of the effect of three alternative PCMH recognition programs on beneficiary outcomes. To protect the identity of these programs, we have masked their names in all analyses reported here, as explained further below.

14.1 Effects of Different Levels of NCQA PCMH Recognition (Levels 3, 2, and 1) on Beneficiary Utilization and Spending

As discussed in Section 12.3, comparison FQHCs that achieved NCQA Level 3 PCMH recognition by the end of the three-year demonstration period were associated with better beneficiary outcomes than were sites that received no medical home recognition. Overall, we found stronger effects from medical home recognition than we found for demonstration effects, particularly when we focused our analyses solely on comparison sites, as we did in Medical Home Effect Analysis 3.

Exhibit 14.1 compares utilization, process, and spending outcomes for beneficiaries attributed to comparison sites that achieved either NCQA Level 1, 2, or 3 PCMH recognition. The exhibit shows that FQHCs that achieved NCQA Level 3 PCMH recognition had notably different patterns of beneficiary utilization, process, and spending than did sites with lower levels of NCQA recognition. FQHCs that achieved NCQA Level 3 recognition were associated with statistically significant increases in FQHC utilization across all three years relative to sites with lower levels of NCQA recognition, with a steadily increasing pattern of improvement across the years. In contrast to comparison sites that achieved NCQA Level 3 PCMH recognition, comparison sites that achieved NCQA Level 2 recognition were associated with increases in primary care visits *outside of the FQHC* and increases in visits to specialists. Rates of non-ED ambulatory visits generally increased over time for comparison sites that achieved NCQA Level 2 recognition, but to a lesser extent than they did for NCQA-Level-3-recognized comparison sites.

These results are consistent with our prior findings that suggested that ambulatory visit measures appear to be highly sensitive to implementation of the medical home model and may be a harbinger of reductions in spending. The most sensitive measure of utilization appears to be the number of FQHC visits, followed by total PCP visits, non-FQHC PCP visits, and total specialist visits. The utilization patterns in Exhibit 14.1 show that the effects of NCQA Level 3 PCMH recognition each year were typically stronger than comparable effects for NCQA Levels 2 and 1. Additionally, Year 3 effects were typically stronger than Year 2 and 1 effects. We did not observe a clear dose-response effect for the utilization measures; rather, Level 2 and Level 1 sites tended to have patterns and magnitudes of effects that were similar to one another and were generally smaller in magnitude compared with Level 3 sites.

A similar pattern is evident for expenditures, with the most notable cost savings seen among comparison FQHCs that achieved NCQA Level 3 recognition. Cost savings are seen across all three demonstration years, but are strongest in Year 3, with an average savings of $434 per beneficiary per year in Year 3 compared with $277 in Year 1. In contrast, among FQHCs that achieved NCQA Level 2 recognition, a non-significant level of savings is evident only in Year 3. No apparent cost savings are apparent among FQHCs that achieved NCQA Level 1 recognition. Furthermore, among FQHCs that achieved NCQA Level 3 recognition, we note average savings in inpatient spending across all three years, with more savings in Year 3 than in Year 2 and more in Year 2 than in Year 1. No significant inpatient savings were found for NCQA Level 2 or 1.

Over the three-year demonstration period, comparison sites with NCQA Level 2- or NCQA Level 1 recognition were not able to achieve statistically significant reductions in spending on par with those achieved by comparison sites with NCQA Level 3 recognition. Sites that achieved NCQA Level 2 recognition were associated with a non-significant trend toward lower spending on all three measures first noted in Year 3; it is possible that greater and statistically significant reductions in spending might have been seen over a longer evaluation period although we cannot say this with certainty. In general, the small number of comparison sites that achieved NCQA Level 1 recognition and proportionally smaller beneficiary sample size limit the conclusions we can draw regarding the impact of NCQA Level 1 recognition.

Exhibit 14.1. Medical Home Effect on Utilization, Process, and Spending Measures, by NCQA Recognition Level Among Comparison FQHCs Only[a]

	NCQA Level 3 Estimate (SE) (n=250,163 beneficiaries)			NCQA Level 2 Estimate (SE) (n=176,173 beneficiaries)			NCQA Level 1 Estimate (SE) (n=49,072 beneficiaries)		
Outcome	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Utilization Measures[b]									
FQHC visits	**72.38*** (18.83)**	**160.06*** (18.11)**	**207.83*** (15.84)**	**–82.35*** (23.32)**	**86.21*** (21.93)**	**97.58*** (19.52)**	**–138.34*** (37.33)**	**–151.97*** (38.17)**	**92.72** (32.11)**
p-value	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**0.004**
Non-FQHC PCP visits	20.48 (18.46)	–7.53 (20.82)	**–46.82* (21.54)**	**52.85* (21.10)**	**71.62** (22.85)**	**48.26* (24.29)**	**53.24† (32.10)**	**87.68* (38.35)**	47.99 (38.07)
p-value	0.267	0.717	**0.030**	**0.012**	**0.002**	**0.047**	**0.097**	**0.022**	0.207
PCP visits	**57.54* (22.84)**	**109.01*** (23.74)**	**122.73*** (22.71)**	**–47.27† (28.41)**	**118.91*** (28.67)**	**94.60*** (28.59)**	**–145.51** (47.09)**	**–175.93*** (49.96)**	–52.89 (45.41)
p-value	**0.012**	**<0.001**	**<0.001**	**0.096**	**<0.001**	**<0.001**	**0.002**	**<0.001**	0.244
Specialist visits	–29.88 (21.64)	**–42.95† (23.22)**	**–76.69*** (22.99)**	**–45.78† (24.33)**	25.43 (26.06)	**73.34** (25.46)**	**–75.82† (41.75)**	35.60 (46.84)	**91.72* (43.94)**
p-value	0.167	**0.064**	**<0.001**	**0.060**	0.329	**0.004**	**0.069**	0.447	**0.037**
Total ED visits	–13.33 (12.69)	3.89 (12.41)	–2.85 (12.07)	**–24.03† (14.48)**	8.95 (14.03)	–5.93 (13.71)	12.97 (24.74)	–32.89 (25.19)	27.70 (24.04)
p-value	0.293	0.754	0.813	**0.097**	0.524	0.665	0.600	0.192	0.249
Outpatient-only ED visits	–11.37 (11.18)	1.37 (10.86)	–0.24 (10.55)	–14.28 (12.70)	18.41 (12.35)	18.12 (11.83)	5.20 (21.27)	–35.22 (22.40)	19.89 (20.75)
p-value	0.309	0.899	0.982	0.261	0.136	0.126	0.807	0.116	0.338
Inpatient admissions	–4.18 (5.38)	–5.11 (4.96)	**–9.55† (4.90)**	1.96 (6.06)	7.31 (5.42)	–6.14 (5.45)	14.03 (10.02)	12.41 (9.19)	**16.37† (8.76)**
p-value	0.438	0.303	**0.051**	0.746	0.177	0.259	0.162	0.177	**0.062**

	NCQA Level 3 Estimate (SE) (n=250,163 beneficiaries)			NCQA Level 2 Estimate (SE) (n=176,173 beneficiaries)			NCQA Level 1 Estimate (SE) (n=49,072 beneficiaries)		
Outcome	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Inpatient ACSC admissions	–1.17 (1.85)	–1.03 (1.74)	–0.67 (1.75)	1.30 (2.00)	0.34 (1.98)	–0.81 (1.95)	–0.98 (3.93)	–4.46 (4.00)	–2.12 (3.42)
p-value	0.527	0.555	0.701	0.517	0.864	0.677	0.804	0.265	0.536
Inpatient readmissions	0.00 (0.70)	–0.07 (0.69)	–0.84 (0.70)	0.66 (0.77)	0.97 (0.72)	–0.25 (0.79)	0.76 (1.23)	–0.36 (1.24)	–1.61 (1.38)
p-value	1.000	0.923	0.229	0.392	0.179	0.755	0.536	0.772	0.243
Process Measures									
All four recommended diabetes tests	0.77 (0.59)	**1.49** (0.53)**	**1.18* (0.51)**	0.52 (0.62)	**1.64** (0.57)**	**1.67** (0.57)**	–0.86 (1.20)	1.01 (1.05)	1.30 (0.96)
p-value	0.189	**0.005**	**0.021**	0.404	**0.004**	**0.003**	0.474	0.335	0.174
HbA1c test	–0.45 (0.58)	–0.84 (0.57)	**–1.07* (0.53)**	0.88 (0.73)	1.06 (0.73)	**1.84* (0.72)**	1.22 (1.28)	1.63 (1.38)	–0.99 (1.13)
p-value	0.437	0.144	**0.045**	0.225	0.145	**0.010**	0.339	0.236	0.379
LDL test	**–1.53* (0.69)**	–0.27 (0.67)	0.04 (0.65)	**1.55† (0.86)**	0.15 (0.78)	1.03 (0.79)	–2.04 (1.34)	–1.69 (1.37)	–0.76 (1.37)
p-value	0.027	0.693	0.947	**0.071**	0.852	0.194	0.129	0.216	0.580
Eye exam	**1.51* (0.73)**	**2.34*** (0.68)**	**2.18*** (0.66)**	0.35 (0.81)	1.22 (0.76)	0.81 (0.77)	0.52 (1.42)	0.97 (1.35)	0.42 (1.34)
p-value	**0.040**	**<0.001**	**<0.001**	0.669	0.107	0.296	0.713	0.469	0.753
Nephropathy test	0.01 (0.81)	**1.42† (0.74)**	1.00 (0.71)	0.47 (0.88)	**2.59** (0.84)**	**2.34** (0.82)**	**–2.85† (1.62)**	–1.30 (1.54)	2.35 (1.50)
p-value	0.990	**0.054**	0.160	0.596	**0.002**	**0.004**	0.079	0.397	0.116
Lipid test for patients with ischemic vascular disease	**–1.78† (0.98)**	–0.15 (0.95)	0.22 (0.95)	0.44 (1.19)	–0.24 (1.09)	–0.11 (1.12)	**–3.34† (1.73)**	0.09 (1.95)	0.99 (1.93)
p-value	**0.069**	0.871	0.815	0.713	0.823	0.925	**0.054**	0.965	0.606

Outcome	NCQA Level 3 Estimate (SE) (n=250,163 beneficiaries) Year 1	Year 2	Year 3	NCQA Level 2 Estimate (SE) (n=176,173 beneficiaries) Year 1	Year 2	Year 3	NCQA Level 1 Estimate (SE) (n=49,072 beneficiaries) Year 1	Year 2	Year 3
Spending Measures									
Total Medicare expenditures without care management fees	**–277.54* (138.68)**	**–327.25* (132.16)**	**–434.12*** (130.77)**	61.56 (164.45)	183.38 (157.43)	–72.87 (155.96)	370.53 (269.49)	**562.07* (272.78)**	292.22 (252.75)
p-value	**0.045**	**0.013**	**<0.0010**	0.708	0.244	0.640	0.169	**0.039**	0.248
Inpatient spending	–159.38 (97.15)	**–227.93** (87.89)**	**–279.57*** (84.89)**	26.19 (108.05)	132.54 (97.63)	–89.17 (95.89)	260.32 (179.29)	234.00 (174.55)	**297.69† (157.98)**
p-value	0.101	**0.010**	**<0.001**	0.809	0.175	0.352	0.147	0.180	**0.060**
Part B expenditures[c]	**–74.00** (28.16)**	**–105.03*** (27.37)**	**–118.17*** (24.87)**	–46.02 (28.29)	–35.50 (27.26)	**–71.93* (28.09)**	9.89 (46.14)	45.88 (48.32)	**–94.75* (40.60)**
p-value	**0.009**	**<0.001**	**<0.001**	0.104	0.193	**0.010**	0.830	0.342	**0.020**

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).

† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).

[a] This exhibit presents results using Medical Home Effect Analysis 3, as described in Chapter Twelve.

[b] FQHC visits included any visit to an FQHC regardless of provider specialty. Total PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Total specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to specialists at primary care clinics are identified by E&M visit codes. Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission.

[c] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file, including spending on laboratory, imaging, and physician services provided in ED settings.

14.2. Effects of Other Non-NCQA Medical Home Recognition Programs

We analyzed the effect of three other medical home recognition programs on beneficiary outcomes. Like the previous analyses presented in this chapter, this analysis used Medical Home Effect Analysis 3 and focused on comparison FQHCs to avoid confounding by the demonstration's unique compressed timeline for achievement of recognition. To protect the identity of the medical home recognition programs, we mask their names by referring to each by a specific letter code (A, B, or C).[75]

We found that the effects of differing medical home recognition on utilization measures varied widely (see Exhibit 14.2). Relative to sites that achieved NCQA Level 3 PCMH recognition, sites receiving recognition from Program B saw no change in ambulatory visit rates. Unexpectedly, sites receiving recognition from Programs A and C had reductions in FQHC visits in at least one year. When examining total PCP visits, we found inconsistent effects of recognition from Programs B and C, while recognition from Program A was associated with large reductions in PCP visits.

The effects of medical home recognition on spending from Programs A and B fluctuated substantially over each of the three years for all three spending measures (Exhibit 14.2). Sites that achieved recognition from Program C exhibited consistent reductions in spending after Year 1, although none of these results was statistically significant. The lack of observed effects most likely relates to the smaller number of sites that achieved recognition through these programs relative to the number of sites that achieved NCQA Level 3 recognition. The magnitude of the medical home effect on spending across years for sites with recognition from Programs A, B, and C was much smaller on average than that on spending reductions achieved by NCQA-Level-3-recognized sites.

Interestingly, only one recognition program among the six examined was associated with reductions in ED visits. Program C reduced ED visits by 44 per 1,000 beneficiaries in Year 2 and by 25 visits per 1,000 beneficiaries in Year 3.[76] Similarly, FQHCs receiving recognition under Program C were the only group to achieve consistent reductions in inpatient admissions over time.

---

[75] We have chosen to mask the identities of the other recognition programs because our intent is not to identify the most "successful" program, but rather to evaluate heterogeneity in effects of individual programs on beneficiary outcomes.

[76] The six recognition programs examined include NCQA PCMH Recognition 1, 2, and 3 and also Programs A, B, and C.

Exhibit 14.2. Medical Home Effect on Utilization, Process, and Spending Measures for Three Non-NCQA Recognition Programs Among Comparison FQHCs Only[a]

	Program A Estimate (SE)			Program B Estimate (SE)			Program C Estimate (SE)		
Outcome	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Utilization Measures (per 1,000 beneficiaries per year) [b]									
FQHC visits	**–370.46*** (76.61)**	–114.55 (72.07)	**–206.50** (63.15)**	–0.45 (43.62)	–40.94 (44.32)	9.80 (40.81)	**–89.38*** (21.87)**	–17.84 (22.11)	**–36.41† (20.04)**
p-value	**<0.001**	0.112	**0.001**	0.992	0.356	0.810	**<0.001**	0.420	**0.069**
Non-FQHC PCP visits	**–138.29* (60.29)**	**–291.33*** (65.16)**	**–402.53*** (67.28)**	–33.51 (36.41)	51.82 (44.96)	**104.90* (48.28)**	25.86 (19.96)	26.99 (23.41)	11.17 (23.90)
p-value	**0.022**	**<0.001**	**<0.001**	0.357	0.249	**0.030**	0.195	0.249	0.640
PCP visits	**–490.56*** (84.13)**	**–293.09*** (81.95)**	**–469.41*** (80.66)**	**–117.09* (55.35)**	67.45 (60.74)	**166.14** (63.36)**	**–44.19† (26.75)**	**75.27** (28.32)**	21.66 (28.17)
p-value	**<0.001**	**<0.001**	**<0.001**	**0.034**	0.267	**0.009**	**0.099**	**0.008**	0.442
Specialist visits	–54.73 (59.53)	**–187.81** (62.78)**	**–236.93*** (64.08)**	42.41 (57.25)	–94.16 (64.23)	42.07 (62.32)	–23.81 (25.35)	**–83.91** (27.76)**	–18.34 (26.48)
p-value	0.358	**0.003**	**<0.001**	0.459	0.143	0.500	0.348	**0.003**	0.488
Total ED visits	–30.59 (36.69)	–49.12 (35.81)	–4.52 (37.14)	2.02 (26.48)	**54.85* (24.93)**	29.86 (26.32)	–15.02 (14.60)	**–47.89** (14.77)**	**–44.41** (14.79)**
p-value	0.405	0.170	0.903	0.939	**0.028**	0.257	0.304	**0.001**	**0.003**
Outpatient-only ED visits	–12.19 (30.87)	–1.68 (28.14)	21.94 (30.44)	10.49 (21.16)	**38.38† (20.34)**	21.10 (20.47)	–17.91 (12.72)	**–43.91*** (13.00)**	**–25.44* (12.75)**
p-value	0.693	0.952	0.471	0.620	**0.059**	0.303	0.159	**<0.001**	**0.046**
Inpatient admissions	7.52 (15.77)	**–23.66† (13.10)**	–1.09 (13.24)	4.02 (12.95)	**20.10† (11.34)**	**20.02† (11.12)**	–3.39 (6.49)	**–12.12* (5.95)**	**–19.84*** (5.82)**
p-value	0.633	**0.071**	0.934	0.756	**0.076**	**0.072**	0.602	**0.042**	**<0.001**
Inpatient ACSC admissions	4.21 (4.87)	–1.78 (4.18)	4.89 (3.90)	3.13 (4.71)	–2.98 (5.69)	5.00 (4.72)	0.63 (2.20)	–2.47 (2.30)	–3.61 (2.29)
p-value	0.388	0.670	0.210	0.506	0.600	0.289	0.776	0.282	0.116

	Program A Estimate (SE)			Program B Estimate (SE)			Program C Estimate (SE)		
Outcome	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Inpatient readmissions	2.40 (2.02)	–0.25 (1.81)	0.07 (1.78)	1.71 (1.60)	0.10 (1.43)	0.72 (1.48)	0.47 (0.82)	0.66 (0.78)	-0.24 (0.82)
p-value	0.235	0.892	0.970	0.287	0.942	0.628	0.562	0.398	0.770
Process Measures (percentage points)									
All four recommended diabetes tests	–2.02 (2.06)	**3.05† (1.76)**	2.07 (1.60)	–0.36 (1.52)	1.75 (1.26)	**2.98* (1.18)**	0.13 (0.64)	0.81 (0.58)	**1.13* (0.55)**
p-value	0.328	**0.083**	0.196	0.812	0.163	**0.012**	0.839	0.161	**0.040**
HbA1c test	–0.26 (1.84)	1.17 (1.99)	**–2.58† (1.52)**	**–2.49* (1.23)**	**–2.62† (1.38)**	–1.31 (1.40)	**2.57*** (0.74)**	**2.51*** (0.72)**	0.22 (0.64)
p-value	0.887	0.556	**0.091**	**0.043**	**0.058**	0.348	**<0.001**	**<0.001**	0.727
LDL test	–0.98 (2.33)	**–4.79* (1.86)**	**–3.79* (1.87)**	1.38 (1.93)	1.01 (1.83)	–2.50 (1.78)	0.28 (0.81)	0.93 (0.78)	**1.44† (0.77)**
p-value	0.674	**0.010**	**0.042**	0.475	0.581	0.162	0.734	0.234	**0.060**
Eye exam	–1.87 (2.55)	**5.53* (2.22)**	2.90 (2.14)	–2.33 (2.05)	2.81 (1.86)	0.21 (1.90)	–0.40 (0.83)	–0.20 (0.78)	0.32 (0.76)
p-value	0.464	**0.013**	0.175	0.254	0.130	0.912	0.634	0.794	0.680
Nephropathy test	2.90 (2.72)	–0.62 (2.43)	1.70 (2.35)	–2.89 (2.12)	–2.07 (2.03)	1.67 (2.04)	**–1.98* (0.90)**	-0.33 (0.83)	0.41 (0.83)
p-value	0.286	0.799	0.469	0.172	0.308	0.415	**0.027**	0.690	0.621
Lipid test for patients with ischemic vascular disease	1.06 (3.48)	–3.00 (3.15)	–3.62 (3.12)	0.64 (2.19)	1.16 (2.15)	–2.93 (2.10)	**2.54* (1.24)**	1.34 (1.18)	0.67 (1.18)
p-value	0.760	0.341	0.246	0.769	0.590	0.163	**0.041**	0.255	0.570
Spending Measures (dollars per beneficiary per year)									
Total Medicare expenditures	342.11 (419.57)	–343.40 (371.55)	77.53 (358.07)	–101.10 (340.90)	**642.56† (350.14)**	444.20 (360.38)	133.70 (174.63)	40.21 (161.32)	–16.04 (157.11)
p-value	0.415	0.355	0.829	0.767	**0.066**	0.218	0.444	0.803	0.919
Inpatient spending	238.75 (270.40)	–341.69 (228.92)	–143.89 (224.49)	–82.09 (221.89)	117.22 (187.05)	–169.71 (196.78)	130.83 (122.88)	–59.85 (104.62)	–113.08 (100.17)
p-value	0.377	0.136	0.522	0.711	0.531	0.388	0.287	0.567	0.259
Part B expenditures[c]	–44.16 (54.67)	**–96.84† (56.27)**	**–104.58* (48.38)**	8.65 (82.39)	115.64 (90.67)	101.87 (82.93)	19.08 (37.92)	8.76 (31.03)	–26.58 (29.40)
p-value	0.419	**0.085**	**0.031**	0.916	0.202	0.219	0.615	0.778	0.366

SOURCE: RAND analysis of CMS's TAP file claims (November 1, 2010 to October 31, 2014).
† p<0.10; * p<0.05; ** p<0.01; *** p<0.001. Bold indicates statistically significant results (p<0.10).
[a] This exhibit presents results using Medical Home Effect Analysis 3 as described in Chapter Twelve.
[b] FQHC visits included any visit to an FQHC regardless of provider specialty. Total PCP visits included visits to primary care physicians, nurse practitioners, and physician assistants who practice at FQHCs, rural health clinics, or primary care clinics. Total specialist visits included visits to specialists who practice at FQHCs, rural health clinics, or primary care clinics. Visits to specialists at primary care clinics are identified by E&M visit codes. Total ED visits included both outpatient-only ED visits that did not lead to a hospitalization and ED visits that were followed by hospital admission. Utilization is measured as visits per 1,000 beneficiaries per year except for Inpatient readmissions which are measured as percentage points.
[c] This category corresponds to all claims in the Physician/Supplier Part B ("carrier") file, including spending on laboratory, imaging, and physician services provided in ED settings.

14.3. Chapter Summary and Conclusion

In this chapter we examined the effect of different levels of NCQA PCMH recognition and of alternative medical home recognition programs on beneficiary outcomes. Key findings included the following.

- Among comparison sites, NCQA Level 3 PCMH recognition was associated with large reductions in all spending measures, increases in primary care utilization, and reductions in the use of specialty care and primary care services *outside of* the FQHC.
- While we did not observe a strong "dose-response relationship" between NCQA PCMH recognition level and beneficiary outcomes, comparison sites that achieved NCQA Level 1 or 2 PCMH recognition achieved smaller effects on primary care utilization and very few statistically significant reductions in spending.
- Among non-NCQA recognition programs, only Program C recognition was associated with reductions in inpatient admissions and ED visits. Comparison sites that achieved recognition from Program C did not reduce spending on any of the three measures we examined.

These analyses help confirm that NCQA Level 3 PCMH recognition was the most useful measure of medical home recognition for our evaluation, given the heterogeneous effects on beneficiary outcomes we observed with all other types of recognition. The heterogeneous effects of the alternative recognition types on beneficiary outcomes suggest that additional exploration, beyond this study's FQHC cohort, could contribute to a more generalizable understanding of how different components of recognition programs impact changes over time in beneficiary outcomes.

Small sample sizes limit our ability to draw firm conclusions about the effects of alternative medical home recognition on beneficiary outcomes. Nevertheless, the statistically significant findings we observed for multiple utilization measures suggest that sites achieving recognition under these programs can have large effects on utilization that differ dramatically from the patterns found among sites that achieved NCQA Level 3 PCMH recognition. It is also important to note that some findings may be spurious given the large number of analyses conducted.

Concluding Thoughts on Key Policy Question 3

Overall, our analyses showed that the effect of achieving NCQA Level 3 PCMH recognition (the "medical home effect") was consistent with CMS's goals of better access, better care, and better health with lower costs. Analyses of the effect of alternative forms of PCMH recognition from sources other than NCQA (Chapter Fourteen) confirmed that NCQA Level 3 PCMH recognition was the most useful measure of medical home recognition for our evaluation.

The effects of achieving NCQA Level 3 PCMH recognition increased as we refined the reference group (analytic comparison group) used in our comparisons. The strongest effects were

found for Medical Home Effect Analysis 3, which focused only on comparison sites, examining outcomes for beneficiaries attributed to comparison FQHCs that achieved NCQA Level 3 PCMH recognition with outcomes for beneficiaries attributed to comparison FQHCs that received no recognition. An important caveat to these results is that, although we adjusted for observed and unobserved differences between sites that achieved NCQA Level 3 PCMH recognition and those that did not, this design was unable to adjust for any unobserved differences between both types of sites that may have led to differential trends over time in beneficiary outcomes.

Our analyses of the medical home effect on beneficiary experience (Chapter Thirteen) found mixed results, with improved outcomes for beneficiaries attributed to FQHCs that achieved NCQA Level 3 recognition in some areas relative to those attributed to sites that did not achieve NCQA Level 3 recognition or that received no recognition, and worse outcomes over time in others. Improvements in timeliness, evidence-based care, and coordination of care seem consistent with the underlying principles of the PCMH. However, worsening performance in areas related to provider loyalty and continuity and receiving respectful treatment from clerks, receptionists, and providers showed that the challenges and burdens associated with achieving recognition can have unintended consequences on beneficiary experiences.

Further, despite many positive effects of medical home recognition seen in these analyses, site leaders, clinicians, and staff reported by the end of the demonstration that more needed to be done before their medical homes would optimize beneficiary experiences and outcomes. This topic will be discussed in the next chapter.

CONTINUING TRANSFORMATION AND CONCLUSIONS

In the final two chapters of this report, we focus on overarching issues relevant to our evaluation of the demonstration as a whole:

In Chapter Fifteen, we examine the intensity of change, the resulting transition climate, and the remaining transformation required for sites to fully become medical homes, even after attaining recognition and the end of the demonstration.

In Chapter Sixteen, we highlight some key findings from this evaluation and make some concluding observations.

15. Intensity of Change and Remaining Transformation

FQHCs are making great strides to transform their practices into PCMHs. Seventy percent of sites in the FQHC APCP Demonstration achieved NCQA Level 3 PCMH recognition, and participation in the demonstration was an important factor in determining whether a site achieved NCQA Level 3 recognition. Some components of the demonstration, particularly TA uptake (attending five or more AIR webinars, attending five or more AIR office hours, and viewing five or more feedback reports) were statistically significantly associated with achieving NCQA recognition. This evidence speaks to the value of the demonstration and the intervention components provided.

At the same time, many of the sites (44 percent) achieved recognition during the last three months of the demonstration, indicating a rush toward recognition at the end of the demonstration. While NCQA Level 3 PCMH recognition was achieved by many sites, the transformation continued. In other words, the end of the demonstration was only the beginning of PCMH transformation.

In this chapter, we describe the intensity of change, the resulting transition climate, and the remaining transformation required for sites to fully become medical homes, even after attaining recognition and the end of the demonstration, as reported by interviews with site leaders.

15.1. Incomplete Implementation of PCMH Transition

While the results of the evaluation point to progress in transforming FQHCs into PCMHs, the implementation of the PCMH model was far from complete.

Many sites were still in the process of transition by the end of the demonstration, even after attaining PCMH recognition**.** In classic models of organizational change, organizations and groups must go through phases of first "unfreezing" current routines, mindsets, and other existing patterns of structure and process, then "transitioning" as roles, structures, and processes are reconfigured, and finally "refreezing" as the new patterns crystallize and become the new norms (Weick and Quinn, 1999; Lewin, 1947). Although a majority of FQHC APCP Demonstration sites achieved NCQA Level 3 PCMH recognition, the qualitative data from site leaders portray many sites still undergoing substantial transition, including sites that achieved NCQA Level 3 recognition by the end of the demonstration. This finding highlights both the extent of changes undergone in most demonstration sites (as described in Chapter Seven) and the role of PCMH recognition as a stimulant of ongoing practice transformation, not necessarily the end point (Chapter Two).

Nearing the end of the demonstration, sites continued to struggle with the level of change required. Many site leaders discussed the often-unexpected amount of change required for both

PCMH transformation and recognition and, in particular, the need to prioritize changes sufficiently to pass review of the recognition application. In many cases, demonstration sites reported that there was much work remaining, even after attaining recognition, to fully implement and routinize changes. This ongoing set of tasks involved additional large-scale work on major components of the PCMH model implemented beyond the minimum required to meet NCQA Level 3 PCMH recognition standards (e.g., team-based care, specialist and diagnostic tracking, and population management). It also involved more-refined work that had not been fully addressed before the final recognition deadline passed (e.g., enhancing the patient web portal, improving the patient experience survey).

During interviews, more than three-quarters of site leaders commented on the substantial amount of practice change required to confidently submit the application for NCQA recognition and the extent of general transformation still necessary to become what they considered "fully functioning" medical homes, even when a site had achieved NCQA Level 3 PCMH recognition. Remarks on the amount of change also emphasized that sites frequently did not know ahead of time the extent of change required or the amount of resources needed for the PCMH effort, especially in relation to the limited means of most FQHCs. Illustrative quotations from site leaders describing the incomplete transformation are shown in Exhibit 15.1.

Exhibit 15.1. Extent of Transformation Still Required at the End of the FQHC APCP Demonstration

Topic	Illustrative Quotations from Respondents
Extent of transformation required	"I had heard about it because I'm board certified, and the American Board of Family Practice talks about it a lot. But I didn't know the extent that it would be. [LAUGHS] No one tells you until you go through it how much it would definitely change the clinic." "And I think everybody agreed that we had no idea of how much work it entailed and the amount of all the different guidelines and criteria that you had to meet. Everybody saw it as a good place to be down the road. And everybody knew it was going to be painful. I don't think that we understood how painful and how extensive it was going to be, and that there was going to be a lot of stuff that needed to be done that we probably didn't have the resources for."
Amount of change required after demonstration	"I think there're a couple of processes that we need to fine tune. We're working on the branding of PCMH, to get our staff to understand what that is. You want them to know what it is and be proud of the achievement." "And then also making it such that 'patient centered medical home' is a concept that medical records and others are completely on board with—that it's not just the people who interact one-on-one in exam rooms with patients, but that it's really pervasive in our whole organization. We've got more work to do there." "And again, it's not just changing the workflows; it's getting to where everybody is

Topic	Illustrative Quotations from Respondents
	more accustomed to those different workflows." "I think to become an ideal medical home it would just become automatic, that it would become part of the daily work we do, so that it becomes more inherent in just our daily stuff." "Really the integration piece across the service lines has been challenging, not just in name only, like, 'Yeah, we work together.' Like, 'I refer to mental health, so we're good.' But really so we're all working together, patients being able to access the other service lines from any door, no wrong door kind of thing."
Climate of transition	"It's those growing pains, and you have everyone complaining about it, and it's just a transition. I feel like we've had so many transitions and so many growing pains the past four years, what happens is you go through a transition and you finally get comfortable and feel like you have your groove, and then we'll get a new [EHR] patch or something new, and then new meaningful use measures or whatnot. That's where the stress point . . . peaks." "The role of nurses has just expanded in every direction. We're really struggling with all of the multiple components of what we want to be able to offer to patients in a visit. You know, that rooming checklist and the number of things we want to be able to screen patients for, and to close the loop on and previsit planning, has really increased the workload for our clinical support teams in a very, very significant way." "The doctors . . . it's not that they disagree with PCMH, but they feel like they're doing a lot already. So, then to come back and say, 'now I need for you to do previsit planning' . . . that was one that had a lot of pushback just because it was another thing that you're asking the nurses to do, and then to document, and then for the doctors to look at that. Not that those aren't good things, but it's adding additional things for them to do, on top of the fact that we are an FQHC who has to meet the Title X [family planning grant] and UDS [Uniform Data System] standards of how they want us to document things, and then meaningful use. So with all the other initiatives we already have going on, they just really had a hard time with one or two additional things to do or places to click. It's just asking them to do more with what you already have."
Ongoing stress	"At some point, the providers may become burnt out. There are so many documentation requirements that are being put on providers now. And with the fact that being an FQHC we don't have all that staffing, ancillary staff, to really assist the providers in doing all the documentation. And it's not just patient-centered medical home, but as we go into the various stages of meaningful use and ICD–10 coming down next year, all those things. So I think that may affect in terms of, not just the provider, but our whole clinical teams' interaction with the patient."

Other comments from the follow-up interviews described the general amount of change still necessary even after the demonstration, including the need to educate and engage all staff in the PCMH model, further routinize the new PCMH changes in practice systems and everyday workflows, and better integrate PCMH components and different services within the FQHC into a fully functioning medical home.

Moreover, site respondents reported that they continue to experience a general climate of transition—with the resultant uncertainty, stress, and additional workload typically associated with this phase—that was expected to continue after the demonstration. The amount and pace of change, which, as already mentioned, was expected to continue in many sites beyond the end of the demonstration, was associated with a climate of transition, uncertainty, and added stress for FQHC staff. One demonstration site leader characterized this transition phase and climate as "growing pains" toward becoming a PCMH.

Some of these "growing pains" were related to the uncertainty of adapting to new roles and procedures. Other demonstration site respondents indicated, however, that PCMH transformation also entailed asking providers and staff "to do more." This included increasing the workload at least in the short term—by, for example, carrying out new PCMH-related tasks not performed previously (e.g., previsit planning), performing previous tasks on a more-consistent basis (e.g., care planning), or striving to meet the exponential growth in care documentation required by PCMH and other quality programs and initiatives.

The added stress under this transition climate was observed to contribute to the workplace pressures already experienced by providers and other clinical staff treating "tough, tough populations" in the typically underresourced FQHC context. These stresses were considered particularly acute for "newbie" staff, who tended to be at higher risk for burnout and turnover. Other site leaders were explicitly concerned about the effects of this transition climate on patient care, as delivered by the whole clinical team.

15.2. Remaining PCMH Changes

In the context of this change, site leaders were forthright in noting that more work still needs to be done. During interviews, demonstration site respondents identified a range of specific PCMH practices they believed required additional transformation work—even after attaining recognition—for sites to be considered fully functioning PCMHs. These practices included four major PCMH components that respondents felt had been implemented only partially or close to the minimum necessary to pass the recognition standards:

- team-based care (including care coordination and other "expanded team" roles)
- tracking and coordinating specialist and lab/diagnostic services
- population management
- other EHR functionality supporting the PCMH model of care.

A number of other specific PCMH practices were reported by various sites as needing "fine-tuning" or additional implementation work, including the patient web portal, a less central element to the NCQA standards that some sites decided involved too much effort to adequately address before the final demonstration deadline to submit for recognition. Some respondents also noted that the transition climate would be extended beyond the end of the demonstration for sites

planning to spread the PCMH transformation and recognition effort to other sites within the FQHC, or that were beginning preparations for re-recognition to the NCQA 2014 standards.

Exhibit 15.2 summarizes the main areas of remaining change, which are discussed further below.

Exhibit 15.2. Main Areas of Remaining Change

Topic	Illustrative Quotations from Respondents
Team-based care and other expanded team roles	"And it's not perfect, and the communication between, say, behavioral health and medicine still needs to be improved."
	"I think the care coordinator position—and I hate to keep saying this—but once we're in the new building and we have that setting where it's the pods, I think that will help the integration of the care coordinator."
	"And then the challenge I see on the medical side is empowering the providers to let go of certain amounts of control for things to be handled by other people and for elevating everyone to the top of their license. That's not something I think we're doing real regularly. Then maybe bringing in scribes or other people into the practice team, to help with that."
Tracking and coordinating specialist and lab/diagnostic services	"We need to continue to work on our documentation, making sure that every referral—as much as it's been a hot topic—but every referral has some type of follow-up that is initiated, not just those for a mammogram or those for cardiovascular conditions."
	"We still need to hone the follow-up for the lab tests and diagnostic, because it's still not perfect. Yes, I found enough to support it, but for me personally, it's still a work in progress."
Population management	"I think we're in the early to intermediate stage and we want to continue to develop our population management, working with our [electronic medical record] data collection, getting those reports, identifying the high utilizers, taking that data and actually using it to schedule the visits and schedule a lot of the pre-visit work. It's going to be important to us as we move forward."
Other EHR functionality supporting the PCMH model of care	"Throughout the PCMH change process, we submit [EHR] enhancements that will benefit us, and so we'll continue with that."
	"And we continue to look at our medical record in terms of documenting internal referrals and external referrals, as well as the ability to share information across—medical, dental, behavioral—product lines."
	"We still need much better coordination with other health care providers in our communities; we need to get better at that. Part of it is just electronic health records and starting to have access . . . to see what's going on with the specialists, or our community mental health."
	"I think we have to continue to be robust in terms of our reporting, our monitoring, our feedback to the sites."

Topic	Illustrative Quotations from Respondents
Patient portal	"The patient portal will be our next really significant change for the clinic... it's something we desire, but we're still working around. figuring out whose task it's going to be, what role is it going to fall under, how will we blend it into our current processes. The portal is a big undertaking and an important one." "And part of that is increasing the patient's use of the portal, because a lot of patients are almost web-enabled, but they're not using the portal. So, doing a better job with engaging our patients to utilize the patient portal."
PCMH spread and NCQA re-recognition	"Next steps, we certainly hope that we're going to be able to disseminate PCMH to all our locations." "One big thing we're going to move towards as soon as we submit our Level 3 application for our current demonstration site will be the development of a multisite application for 2014. So, even though we might be satisfying the criteria for Level 3 2011 standards with the demonstration site, we've made the decision to move forward with recognition for all sites, and we're really leaning towards the one 2014 standards application for all five sites." "Yes, we got recognition. I'm very proud of it. But it's not something that stops. It continues. I printed out the 2014 standards yesterday, so I'm ready to go. Got my little binder all ready and we'll start educating on the changes, because there're some changes with the new standards."

Team-Based Care and Other "Expanded Team" Roles

Although virtually all demonstration sites focused substantial efforts on developing their team-based care models, even sites that had attained NCQA Level 3 PCMH recognition reported needing further implementation work. This work included ensuring that "huddles" (i.e., daily team review of upcoming patient appointments and needs) and other teamwork practices were implemented consistently over time and across teams, care coordinators and other care support roles (e.g., community health workers, behavioral health providers, etc.) were fully developed and integrated into the "expanded care team," and midlevel and other clinical staff worked to the full capacity of their license on teams.

Tracking and Coordinating Specialist and Lab/Diagnostic Services

Demonstration sites also had invested substantial effort in improving the tracking and coordination of specialist services. However, given the many challenges interacting with specialists (see Chapter Seven), this was a frequent area requiring additional progress for PCMHs. Tracking laboratory, imaging, and other diagnostic tests appeared to receive less emphasis during the demonstration and thus remained an area for further implementation.

Population Management

Additional work required in population management involved both technical and cultural components. First, many sites discussed improvements to EHR and other data systems that were still needed to effectively monitor patient needs and enable preventive care and other PCMH processes. These improvements included procuring and customizing new registry and patient monitoring software, adequately integrating these functions into existing EHR systems, ensuring consistent documentation of risk and health care data necessary for identifying and managing patients needing preventive or follow-up care, and specific tools and methods (e.g., dashboard software) for providing these data in usable forms to individual providers and provider teams to manage their own empaneled populations of patients. Second, various sites described a continuing need not only to train providers and other staff on these tools, but also to educate and reorient them away from a focus on acute treatment toward management of the total health and medical needs of their panel of patients.

Other EHR Functionality Supporting the PCMH Model of Care

Given the centrality of EHR systems to implementing many components of the PCMH model, it is not surprising that specific EHR enhancements and functionality were cited as integral to further improvement. In particular, areas such as internal coordination of care, external coordination with hospitals and specialists, quality monitoring and feedback, population management, and other PCMH processes were cited as integral to further improvement.

Patient Portal

Respondents at several demonstration sites mentioned the patient web portal as a less central element to the NCQA standards, but one that involved too much effort to adequately address before the final demonstration deadline to submit for recognition.

PCMH Spread and NCQA Re-Recognition

The intensity of transition climate was extended beyond the end of the demonstration for those sites planning to spread the PCMH transformation and recognition effort to other sites within the FQHC. Such intensity also extended to sites beginning preparations for re-recognition to the NCQA 2014 standards that were to become effective several months after the end of the FQHC APCP Demonstration.

15.3. Chapter Summary and Conclusion

While the evaluation overall has pointed to progress in transforming FQHCs into PCMHs, the results presented in this chapter also show that the implementation of the PCMH model among many participating sites was far from complete:

- Many sites were still in the process of transition at the end of the demonstration, even after attaining PCMH recognition. This finding highlights both the extent of changes undergone in most demonstration sites and the role of PCMH recognition in stimulating continuing practice transformation.
- Sites continue to struggle with the substantial level of change required. Many site respondents discussed the need to prioritize changes sufficiently to pass review of the recognition application.
- In a number of sites, the realization of the extent of required change came considerably late in the demonstration period, forcing a relatively rushed pace to implement PCMH changes considered sufficient to submit the recognition application.
- Other comments from sites described the general amount of change still necessary even after the demonstration, including the need to educate and engage all staff in the PCMH model, further routinize the new PCMH changes in practice systems and everyday work routines, and better integrate PCMH components and different services within the FQHC into a fully functioning medical home.
- Site respondents reported that they continue to experience a general climate of transition—with the resultant uncertainty, stress, and additional workload typically associated with this phase—that was expected to continue after the demonstration.
- Site respondents identified a range of PCMH practices they believed required additional transformation work, including four PCMH components that respondents felt had been implemented only partially or close to the minimum necessary to pass the recognition standards:
    - team-based care (including care coordination and other “expanded team” roles)
    - tracking and coordinating specialist and lab/diagnostic services
    - population management
    - other EHR functionality supporting the PCMH model of care.
- A number of other PCMH practices were described as needing “fine-tuning” or additional implementation work, including the patient web portal.

It is not surprising to find site respondents acknowledging the need for additional change and transformation. The amount of change required to achieve medical homeness is considerable; further, PCMH transformation is not an endpoint, but, for many sites, represents a new way of caring for patients, one that needs to be reinforced on a daily basis. Some respondents noted that the transition climate would be extended beyond the end of the demonstration for sites planning to spread the PCMH transformation and recognition effort to other sites within the FQHC, or that were beginning preparations for re-recognition to the NCQA 2014 standards.

Sites participating in the demonstration also were committed to achieving NCQA Level 3 PCMH recognition within a three-year timeframe. This appeared to create a transition climate characterized by a relatively high intensity of change for many sites and a risk, at least in the shorter term, between improving organizational practices and improving the patient experience. This tension is consistent with results of the survey of clinician and staff, who reported a marked worsening in clinic working climate and experience over the course of the demonstration (Chapter Eight).

16. Conclusion

The goal of the CMS FQHC APCP Demonstration was to support the transformation of FQHCs—which focus on underserved communities—into PCMHs, that is, physician- or nurse practitioner–directed medical practices that provide continuous, comprehensive, coordinated, and patient-centered medical care.

RAND's multimethod evaluation research focused on answering three key policy questions:

- What are the effects of the demonstration on practice structure and medical home recognition?
- Do demonstration sites deliver better beneficiary processes and outcomes than comparison sites?
- How does medical home recognition affect beneficiary processes and outcomes?

Below, we briefly review and discuss the implications of some of the key findings relevant to each of these questions and provide some concluding observations.

16.1. Key Findings

Success of the Demonstration in Leading to NCQA Level 3 PCMH Recognition

Overall, 70 percent (n=351) of 503 participating demonstration sites achieved NCQA Level 3 PCMH recognition by the end of the demonstration, compared with only 11 percent of comparison sites. Demonstration sites were about almost seven times more likely than comparison groups to obtain medical home recognition as measured by NCQA Level 3 PCMH recognition. More than half of demonstration sites achieved recognition in the final (12th) quarter of the demonstration. These results speak to the success of the demonstration in helping sites achieve PCMH recognition and to the determination of demonstration sites to become PCMHs within the three-year period.

Key factors supporting achievement of NCQA Level 3 PCMH recognition included a robust EHR system, external funding to support PCMH recognition and transformation efforts, and strong leadership. All of these were strong predictors of NCQA Level 3 recognition for both demonstration and comparison FQHCs. Among demonstration sites, another factor associated with recognition was use of demonstration TA and feedback reports.

Sites took many pathways to NCQA Level 3 recognition. Site leaders described several reasons for participating in the demonstration, including the national movement in primary care toward PCMH both as a care model and for reimbursement, the opportunity to obtain NCQA recognition, the opportunity for QI and practice transformation, and demonstration-enhanced payments and access to demonstration TA. Some sites began with high practice and cultural

readiness for change, while others were less prepared at baseline but still achieved NCQA Level 3 recognition by the end of the demonstration. Analysis of site structural characteristics (e.g., PCMH practice readiness, cultural readiness) and change process factors within our qualitative sample found that high PCMH leader capacity for managing practice change was common among all demonstration sites that achieved NCQA Level 3 PCMH recognition. In contrast, previous low levels of QI or NCQA experience were common to all demonstration sites in the sample that did not achieve NCQA Level 3 PCMH recognition.

Achieving recognition required major change strategies that could affect all aspects of the clinic. FQHCs implemented a variety of practice changes, including team-based care, more-consistent and more-comprehensive empanelment of patients, use of same-day appointments, improved tracking and monitoring of patient data, and expanded quality measurement systems.

Sites sometimes struggled to adapt to new models of care and faced challenges related to establishing workflows, implementing same-day appointments, implementing a patient portal, increasing access to specialty care, and "pulling" necessary data from the EHR into usable formats. Sites improved patient self-management support through education, goal-tracking, and follow-up documented in the EHR. Sites also implemented changes to improve tracking and coordination of care and to expand quality measurement systems and QI practices.

To achieve NCQA Level 3 PCMH recognition, FQHCs required leadership, teamwork, and persistent engagement and implementation efforts by providers and staff over long periods of time. Support from executive leaders, including willingness to allocate financial resources, was widely perceived by site PCMH leads as one of the main facilitators of PCMH transformation. Another important facilitator was to obtain provider and staff buy-in—for example, by educating and communicating with providers and staff on PCMH principles and objectives.

Improvements in Ambulatory Visits But Few Other Changes Seen Among Demonstration Sites

The conceptual model for the FQHC APCP Demonstration and its evaluation built upon the concept that the structure of medical care affects processes and patient outcomes. The hypothesis was that a site's embracing of patient-centered, comprehensive, coordinated, and accessible care, along with a commitment to quality and safety, would lead to medical home recognition. In turn, the configuration of attributes that led to recognition was expected to support improved patient outcomes. Our evaluation used beneficiary claims and survey data to assess whether beneficiaries attributed to demonstration FQHCs had different—and, especially, better—outcomes over time than beneficiaries attributed to comparison sites. We refer to this as the "demonstration effect."

A key finding was that beneficiaries attributed to demonstration FQHCs showed a greater increase over time in ambulatory visits relative to beneficiaries attributed to comparison FQHCs. Beneficiaries attributed to demonstration sites had significantly higher rates of visits to FQHCs

than comparison beneficiaries—a difference that more than doubled by the end of the demonstration (105 more visits per 1,000 beneficiaries). Beneficiaries attributed to demonstration sites also had higher rates of visits to all primary care physicians, regardless of practice setting. These findings suggest that the demonstration may have expanded beneficiaries' access to primary care services, thereby raising awareness of previously unidentified patient needs and, as a result, requiring additional FQHC visits to address these multiple needs.

However, we did not observe other changes in utilization, processes, and costs resulting from the demonstration—including reductions in ED visits and hospitalizations—even though 70 percent of demonstration sites attained NCQA Level 3 PCMH recognition. We attribute this muted demonstration effect to three factors.

First, comparison site exposure to financial and TA resources similar to those received by demonstration sites reduced measurable differences between demonstration and comparison sites, thereby decreasing the chance of detecting differences in beneficiary outcomes. For example, 58 percent of demonstration sites were participants in HRSA's PCMH Initiatives to motivate FQHC adoption of advanced primary care practices; so were 34 percent of comparison sites (Appendix A7.1). [77] Similarly, 93.6 percent of demonstration sites received PCMH supplemental funding; so were 67.7 percent of comparison sites. [78]

Second, both demonstration and comparison FQHCs included sites with and without NCQA Level 3 PCMH recognition. Hence, analyses of outcomes for beneficiaries attributed to demonstration sites necessarily included outcomes for a mixture of beneficiaries, some of whom were attributed to FQHCs that achieved recognition and some of whom were attributed to FQHCs that did not achieve recognition. This blending of outcomes may have attenuated any observed demonstration effect.

Third, most sites that achieved NCQA Level 3 recognition did so toward the very end of the three-year demonstration. With more than half of the sites that reached NCQA Level 3 doing so within the final quarter of the demonstration, final beneficiary outcomes reflect a time during which many sites were allocating substantial resources to achieving recognition. Our interviews with site leaders and TA providers found that the documentation requirements involved in obtaining recognition had the unintended consequence of detracting from practice transformation and process improvement, particularly near-recognition deadlines.

Through mediation analyses, we were able to look more closely at the factors underlying the outcomes seen for demonstration beneficiaries relative to comparison beneficiaries (the

---

[77] Under HRSA's PCMH Initiative, health centers could be recognized as PCMHs by achieving benchmarks for patient-centered care that are focused on care coordination and QI (HRSA Health Center Program, undated).

[78] PCMH supplemental funding recipients in FY 2011 include FQHC grantee organizations that received a one-time-only grant of $35,000 to facilitate PCMH transformation. These funds were designed to help enhance access to care, patient flow redesign, care planning, support for team-based models of service delivery, and necessary systems upgrades.

"demonstration effect"). In particular, we wanted to understand whether achieving PCMH recognition played a role in influencing these outcomes.

The mediation analyses found that the demonstration affected beneficiary outcomes through multiple pathways, including the achievement of PCMH recognition as well as other factors, which might include financial and organizational support from HRSA, ARRA, ONC, and state Medicaid agencies; involvement with ACOs and new payment models; and increasing access to technologies to improve care processes, including EHR systems, decision support mechanisms, and registries. These diverse factors could influence the observed demonstration effect in multiple ways. For example, as described in the previous section, our analyses of the demonstration effect found that beneficiaries attributed to demonstration FQHCs showed a greater increase over time in ambulatory visits (both visits to FQHCs and to other primary care providers) relative to beneficiaries attributed to comparison FQHCs. The mediation analyses examined the factors associated with these results, finding statistically significant mediation effects for NCQA Level 3 PCMH recognition on FQHC visits. In addition, the mediation analyses also found strong evidence that the demonstration affected utilization through a pathway *other* than PCMH recognition. In other words, the increase in ambulatory care visits seen among demonstration beneficiaries was associated both with achieving NCQA Level 3 recognition and with other factors.

The mediation analyses also shed light on the reasons for the "muted" demonstration effect seen in other areas, such as spending. Our mediation analyses found that different, conflicting factors contributed the average amount of overall expenditures: among demonstration sites, NCQA Level 3 PCMH recognition was associated with a $139 *decrease* per beneficiary in overall expenditures; however, other factors associated with the demonstration were independently associated with an *increase* of $224 per beneficiary. In this case, the effects of these different factors cancelled each other out, resulting in a nonsignificant increase in expenditures of $85.

Strong Medical Home Effect Revealed by the End of the Demonstration

We next turned to an analysis of the "medical home effect"—that is, we regrouped the 1,330 FQHCs in the evaluation by whether or not they achieved NCQA Level 3 PCMH recognition by the end of the demonstration.

Our analyses of this "medical home effect" found that outcomes improved more over time for beneficiaries attributed to FQHCs (at both demonstration and comparison sites) that achieved NCQA Level 3 PCMH recognition relative to outcomes for beneficiaries attributed to sites that did not achieve such recognition (although they may have achieved other forms or levels of recognition, such as recognition from the Joint Commission, or NCQA Level 3 PCMH recognition). Beneficiaries attributed to FQHCs that achieved NCQA Level 3 recognition had more ambulatory care visits and better processes, at lower costs than did beneficiaries attributed to FQHCs that did not achieve NCQA Level 3 recognition (Medical Home Effect Analysis 1 in

Chapter Twelve). While medical home recognition affected beneficiary utilization, processes, and outcomes, the effect sizes differed by cohort and reference group (analytic comparison group). We saw some total cost savings in this analysis, but the analysis appeared to underestimate the medical home effect by including in the reference group (i.e., analytic comparison group) FQHCs that may have achieved other forms of PCMH recognition and those that received no recognition at all.

We saw an even greater effect when we compared beneficiary outcomes for sites that achieved NCQA Level 3 PCMH recognition to outcomes for beneficiaries attributed to sites that received no recognition (Medical Home Effect Analysis 2 in Chapter Twelve). Here we saw a decrease in hospital admissions and in inpatient spending, as well as strong total cost savings of $271 per beneficiary per year. We also saw stronger effects over time.

We saw an even stronger medical home effect after we refined the analysis to compare beneficiaries attributed to NCQA Level 3-recognized comparison FQHCs relative to comparison FQHCs with no recognition (Medical Home Effect Analysis 3).

Overall, our medical home analyses showed that FQHCs achieving NCQA Level 3 PCMH recognition achieved better outcomes than sites that did not achieve Level 3 recognition or that received no recognition at all. We saw evidence for these results spanning measures of utilization, process, spending, and beneficiary experience. The results for the medical home analyses are consistent with CMS's goals of better access, better care, and better health with lower costs. The consistency of effects across these three related medical home analyses provides strong evidence that the medical home model leads to improved beneficiary outcomes.

Despite these findings supporting the value of NCQA Level 3 PCMH recognition, we also identified areas for concern that may reflect unintended consequences of the implementation of medical home recognition, especially within a three-year time window (see next section).

Incomplete Transformation at End of Demonstration and Unintended Consequences

Despite the positive effects of medical home recognition, site leaders, clinicians, and staff reported by the end of the demonstration that more needed to be done before their medical homes could optimize beneficiary experiences and outcomes. At the end of the demonstration, many sites were still in the process of transforming, even after attaining PCMH recognition. Sites emphasized ongoing pressures on the time of their clinicians and staff in association with the push to achieve recognition. These findings were confirmed through RAND's examination of longitudinal survey results regarding changes in the perspectives of clinicians and staff. The findings from the CASE surveys (Chapter Eight) suggested that, during the period of the demonstration, participating sites experienced significant stress that manifested itself with worsening survey results on multiple dimensions of practice culture and on multiple dimensions of professional satisfaction. Between the early and late CASE surveys, clinicians and staff

reported significant worsening on multiple measures of clinic culture and teamwork. For most of these measures, the degree of worsening was significantly greater among sites with high baseline RAS scores than among sites with lower baseline RAS scores. Between the early and late CASE surveys, clinicians and staff reported significant reductions in overall professional satisfaction and corresponding increases in stress, burnout, chaos, and likelihood of leaving their practices.

FQHC leaders, staff, and coaches consistently noted the pressures they experienced as they attempted to achieve medical home recognition while also participating in other QI and QA initiatives. The mediation analyses reported in Chapter Eleven found evidence of a significant direct effect on beneficiary outcomes from factors other than NCQA Level 3 PCMH recognition, as described earlier in this chapter.

Additionally, demonstration sites experienced a compressed timeline associated with their commitment to achieve recognition within the three-year demonstration period, a requisite of FQHC participation in the demonstration. During interviews, key stakeholders noted persistent increased stress and pressure associated with achieving recognition, and expressed a decrease in satisfaction and increasing signs of burnout with time (Chapter Seven).

Furthermore, beneficiaries attributed to sites that achieved NCQA Level 3 PCMH recognition experienced worse performance relative to those attributed to sites that did not achieve NCQA Level 3 recognition or that received no recognition in several areas shown in Chapter Twelve. For example, beneficiaries attributed to NCQA Level 3 sites reported being less likely to:

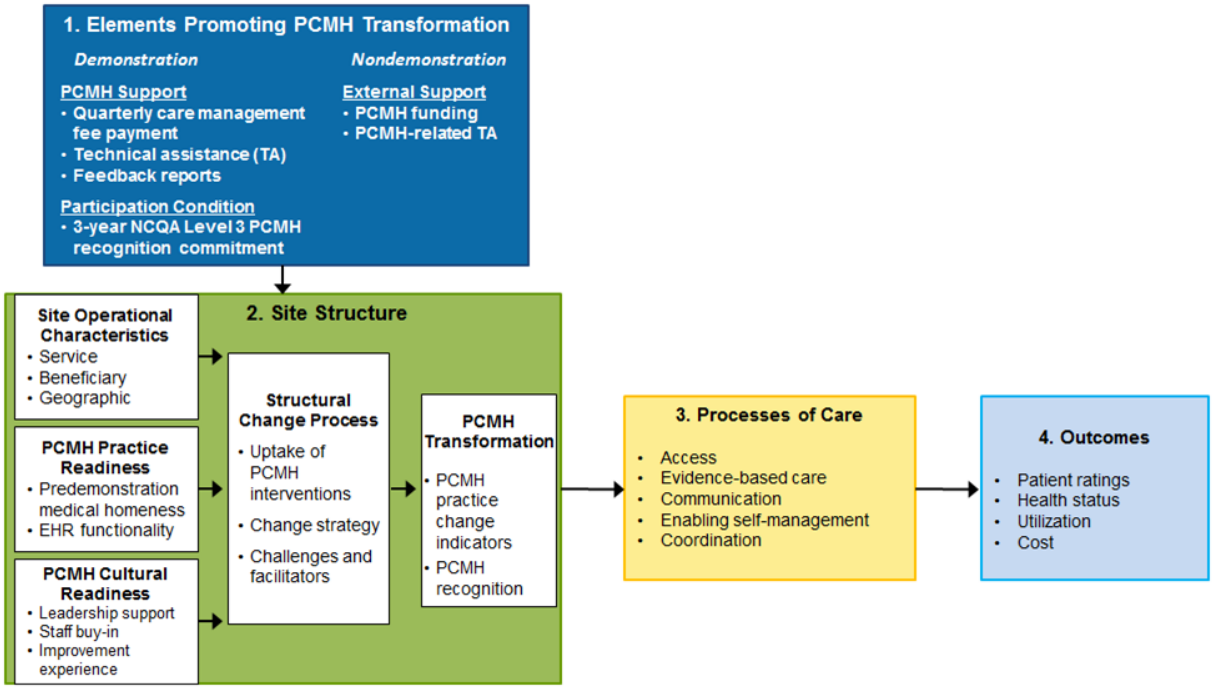
- get an appointment with a specialist when needed
- assign a rating of ten points on a ten-point scale to either their primary care providers or to their specialists
- report that clerks and receptionists treated them with respect
- acknowledge that they received instructions about health literacy from their provider.

These findings suggest that the challenges and burdens associated with achieving PCMH recognition can have mixed effects on beneficiary experiences, leading in many cases to better outcomes but also to unintended consequences. Lessons from the implementation of this demonstration should be considered in the design and evaluation of future medical home implementation efforts, particularly in regard to the possible effect on beneficiary experiences.

Better Access, Better Evidence-Based Processes, Lower Costs

As we move to the end of our evaluation, we reintroduce the conceptual framework first shown in Chapter One (Exhibit 16.1).

Exhibit 16.1. Conceptual Model of Factors Affecting PCMH Transformation and Outcomes



We had hypothesized that the demonstration would produce a "cascade" effect. That is, the interventions associated with the demonstration (Box 1), together with any external supports that could apply to either the demonstration or comparison sites, would have a positive effect on the structures of the FQHCs, i.e., assist in transforming FQHCs into PCMHs. We hypothesized that the transformation of FQHCs into PCMHs would set off a "cascade" with subsequent changes in beneficiary processes and outcomes.

Our evaluation found that, as we had hypothesized, the demonstration resulted in changes to the structure of FQHCs and an increase in medical home recognition (connection between Box 1 and Box 2), with 70 percent of demonstration sites achieving NCQA Level 3 PCMH recognition by the end of the demonstration, compared to only 11 percent of comparison sites.

Further, medical home recognition was associated with improved processes of care (connection between Box 2 and Box 3), with demonstration sites implementing PCMH practice changes to improve patient access to care, evidence-based care, communication, coordination, and patient self-management. We also found that FQHCs that achieved NCQA Level 3 PCMH recognition had improved beneficiary outcomes (connection between Box 2 and Boxes 3 and 4); this is what we have referred to as the "medical home effect."

At the same time, the evaluation indicated that more can be done to optimize the beneficiary outcomes and experiences represented in Box 4. Medical home beneficiaries did not experience improved physical or mental health status relative to beneficiaries at sites not achieving recognition. Further, while results from the beneficiary survey showed that beneficiaries attributed to FQHCs achieving NCQA Level 3 PCMH experienced better relative performance in

areas related to evidence-based care (smoking cessation, provider attention to patient's mental or emotional health) and some areas of patient experience (help from clerks and receptionists, getting easy-to-understand information from providers in response to questions), the results also showed a weakening link between beneficiaries attributed to FQHCs with NCQA Level 3 recognition and providers with respect to loyalty and continuity. Beneficiaries attributed to these FQHCs also had worsening ratings of providers; increased reports of less-respectful treatment from clerks, receptionists, and providers; and less-favorable experiences regarding receipt of health literacy information and information sharing between primary care and specialty providers.

The challenges of implementing the PCMH model were apparent even among sites that achieved PCMH recognition. During interviews, clinicians and staff described ongoing pressures associated with the PCMH recognition process, while the CASE survey (which focused on demonstration sites only) found that, during the demonstration, practices experienced significant stress that manifested in worsening survey results on multiple dimensions of practice culture and professional satisfaction. Site leaders recognized that the process of PCMH transformation is incomplete and ongoing, even for those that have achieved PCMH recognition. The ultimate success of the PCMH model, especially among the FQHC population, will require ongoing efforts and adjustments. We discuss these ideas further in our closing thoughts below.

16.2. Limitations

These analyses have several limitations. First, the assignment of sites to demonstration or comparison groups was not randomized. Sites were invited to apply to participate in the demonstration, and selecting comparison groups was difficult. While sites needed to meet certain eligibility criteria (e.g., serve at least 200 unique, qualified Medicare beneficiaries in the previous 12 months, not be specialty FQHCs, not be exclusively migrant or homeless FQHCs), the nonrandom assignment to the demonstration group meant that demonstration sites might have certain differences from comparison sites (e.g., strong motivation to become a PCMH, an effective EHR in place) that influenced the site's ability to achieve PCMH recognition and to affect patient outcomes.[79] We used a difference-in-differences approach in the evaluation to identify the effect of the demonstration. However, demonstration and comparison sites might differ in their propensity to achieve PCMH recognition in ways that are unobservable and may have cost trajectories and historical patterns in performance on quality measures that differ from

[79] Although sites applied to participate in the demonstration and were therefore not randomly assigned to the demonstration group, CMS received more applicants than they could use for the demonstration. CMS used stratified randomization to select the demonstration sites from those that applied and were eligible. Some of the applicants who were not selected for the demonstration were included in the comparison group.

sites that never become recognized—violating assumptions of the difference-in-differences model.

Second, while our evaluation of Medicare beneficiaries included dual-eligible FQHC users with both Medicaid and Medicare insurance, only a small part of our evaluation focused on Medicaid. We faced many challenges related to the completeness of claims data for Medicaid beneficiaries. A key challenge concerned the lag in availability of Medicaid claims data. Even one year after the completion of the demonstration, we were able to include only two years of Medicaid data. All of these issues are related to a limited assessment of spillover of the demonstration effects to the Medicaid population.

Third, demonstration sites were selected at the "site level" rather than the grantee level. Because most participating sites are not single-site FQHCs, but have several clinics grouped together as a "grantee," we were not always able to conduct each portion of the analysis purely at the "site level." For example, for site leader interviews, we might be directed to interview the CEO of the entire FQHC at the grantee level rather than the clinic level. This choice of interview participant, in turn, might focus the discussion on the full range of clinics rather than the specific FQHC that was participating in the demonstration.

Fourth, comparison sites were exposed to many of the same or similar resources as were provided to demonstration sites through the intervention. We have documented comparison sites' access to financial and TA resources in Chapters Three and Four (see, for example, Exhibits 3.4 and 4.3). This made it difficult to isolate the effect of the intervention from the effects of other resources designed to support PCMH recognition and transformation. Further, the care management fee payments provided through the demonstration were relatively low, with the median PBPQ care management fee payment to demonstration clinics only $26,000 per year. In many cases, the care management fee payments received by demonstration FQHCs were lower than the amount of external funding received. While only demonstration FQHCs were eligible for care management fee payments, comparison FQHCs has similar access to external funding as did demonstration FQHCs.

Fifth, during the first half of the demonstration, the lack of coordination of TA and attempts to measure the uptake of these programs limited the evaluation team's ability to fully assess the contribution of some site characteristics and demonstration's components on FQHC and beneficiary outcomes.

Sixth, our claims-based measure of FQHC access may underestimate the extent of increased access experienced by beneficiaries attributed to demonstration FQHCs. An important attribute of advanced primary care is the improvement of beneficiary access to care. Our claims-based measures of FQHC visits indicate an increase in visits, but this metric might underrepresent increased access, especially if clinics are increasingly using web-based portals and phone meetings as new methods of delivering care. While FQHCs are aware of and striving to develop patient portals to facilitate non-visit-based care, many FQHCs have noted challenges in engaging

staff, patients, and caregivers to use these portals. In the future, as alternate care strategies are implemented, we may observe fewer in-person FQHC visits, even when access is improved.

Seventh, it is still too early to understand the extent to which underuse remains a major issue. The FQHC population has a history of underusing health care services. On some measures of utilization, beneficiaries reported receiving services comparable with those of other Medicare beneficiaries (e.g., influenza and pneumonia vaccination, colorectal cancer screening). Other measures of utilization indicated an ongoing need for more health services (e.g., mental health counseling). As PCMH principles (such as engagement of patients in decisionmaking and more efforts to improve beneficiary health literacy) are increasingly applied to patients, we may anticipate that beneficiaries will use more services. However, over time, we would expect that health service needs will be met, even including a backlog of services that may be overdue. Service use will become more appropriate, and cost savings will continue.

Finally, the time period for the demonstration may have been too short for the full effects of PCMH transformation to become apparent, and the demonstration's effects on acute care utilization and spending might lag behind changes in primary care utilization by one or more years. Further, the time period of the evaluation was insufficient to evaluate the longer-term effects on clinics. We do not yet know whether FQHCs that achieved recognition will sustain the changes made within the clinic, nor the extent to which beneficiary outcomes will ultimately change in response to the clinic's transformation.

16.3. Closing Observations

PCMH transformation is a long-term process requiring change on many levels. In describing our conceptual model, we talked about a "cascade effect." The interventions associated with the demonstration affect the structures of the FQHCs, which, in turn, improve beneficiary processes and outcomes. This cascade does not represent a one-time pass through a series of steps, but requires recurring effort and standardized processes that cut across many people and organizations, as new processes of care are learned, practiced, improved, and repeated.

Becoming a PCMH requires a *clinic* to improve access to care through staff training, implementation of new processes of care, working in care teams, and adapting and using the EHR to best advantage. It also requires *patients* to learn new processes of care—for example, when to follow up in the clinic to reduce the chance that a minor illness will become serious, or when to go to the clinic rather than the ED to be evaluated for illness. Achieving PCMH transformation requires primary care clinics and *hospitals* to establish solid relationships and two-way communication with *specialty clinics* so that all can work together for the benefit of the patients. Ensuring that a patient receives patient-centered medical care also means that, if the patient is unable to see their regular physician on a particular occasion, the clinic has developed an effective process to get the patient needed care while allowing for effective coordination and cohesion regarding follow-up care between the *substitute provider* and the patient's regular

provider. Achieving PCMH transformation also requires the entire clinic to use evidence-based care every day for a multitude of potential conditions that might be seen in patients.

All of these pieces are necessary to achieve a full PCMH transformation and to achieve corresponding cost savings. Furthermore, becoming a medical home involves moving toward PCMH recognition and transformation in a context filled not only with the opportunities and challenges of becoming a medical home, but also with opportunities and challenges from other factors that can facilitate—or sometimes interfere with—improvement from recognition.

As with any new program designed to improve patient care and reduce cost, processes required to change a health care system and adhere to program goals take time. Along the way, some, but not all, aspects of the desired effect may be observed. It appears that the FQHC APCP Demonstration did improve medical home recognition, and that medical home recognition is associated with beneficiary outcomes consistent with CMS's goals of better access, better care, at lower costs. By the end of the demonstration, beneficiaries attributed to FQHCs that achieved NCQA Level 3 PCMH recognition had better access to FQHCs, better evidence-based processes, and lower costs.

Bibliography

42 U.S. Code, Center for Medicare and Medicaid Innovation, § 1315a.

AAAHC—*see* Accreditation Association for Ambulatory Health Care.

Accreditation Association for Ambulatory Health Care, "Survey Eligibility Criteria," web page, undated. As of February 12, 2016: http://www.aaahc.org/en/accreditation/general-information/policies/survey-eligibility-criteria/

———, *Medical Home On-Site Certification Handbook*, 2013.

Agency for Healthcare Research and Quality, "About CAHPS," web page, undated-a. As of December 10, 2012: http://www.ahrq.gov/cahps/about-cahps/index.html

———, "Medical Office Survey on Patient Safety Culture," web page, undated-b. As of July 14, 2016: http://www.ahrq.gov/professionals/quality-patient-safety/patientsafetyculture/medical-office/index.html

———, "TeamSTEPPS Teamwork Perceptions Questionnaire (T-TPQ)," web page, undated-c. As of July 14, 2016: http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/instructor/reference/teampercept.html

———, "Medical Expenditure Panel Survey," 2009. As of November 26, 2012: http://meps.ahrq.gov/mepsweb/survey_comp/hc_response_rate.jsp

———, *Fielding the CAHPS Clinician & Group Surveys*, Rockville, Md.: U.S. Department of Health and Human Services, 2011.

———, *About the CAHPS Cultural Competence Item Set*, Rockville, Md.: U.S. Department of Health and Human Services, 2012a.

———, *About the CAHPS Item Set for Addressing Health Literacy*, Rockville, Md.: U.S. Department of Health and Human Services, 2012b.

———, "Consumer Assessment of Healthcare Providers and Systems (CAHPS)," 2012c. As of November 26, 2012: http://www.ahrq.gov/cahps/surveys-guidance/cg/instructions/index.html

AHRQ—*See* Agency for Healthcare Research and Quality.

AIR—*See* American Institutes for Research.

AIR FQHC Learning Portal—*See* American Institutes for Research Federally Qualified Health Center Learning Portal (*also known as* the FQHC Web Portal).

Alexander Jeffrey A., Amanda R. Markovitz, Michael L. Paustian, Christopher G. Wise, Darline K. El Reda, Lee A. Green, and Michael D. Fetters, "Implementation of Patient-Centered Medical Homes in Adult Primary Care Practices," *Medical Care Research and Review,* Vol. 72, No. 4, 2015, pp. 438–467.

American College of Physicians, "The Advanced Medical Home: A Patient-Centered Physician-Guided Model of Health Care," monograph, 2006.

American Community Survey, data set, 2005–2009. As of August 31, 2016: https://catalog.data.gov/dataset/2005-2009-american-community-survey-5-year-estimates-summary-file-tracts-and-blo

American Association for Public Opinion Research, "Standard Definitions: Final Disposition of Case Codes and Outcome Rates for Surveys," report, 2016.

American Institutes for Research, data file on technical assistance participation, 2014.

American Institutes for Research Federally Qualified Health Center (FQHC) Learning Portal (*also known as* the FQHC Web Portal), "Federally Qualified Health Center Advanced Primary Care Practice (FQHC APCP) Demonstration Project," 2012.

Ammenwerth, Elske, Petra Schnell-Inderst, Christof Machan, and Uwe Siebert, "The Effect of Electronic Prescribing on Medication Errors and Adverse Drug Events: A Systematic Review," *Journal of the American Medical Informatics Association,* Vol. 15, No. 5, 2008, pp. 585–600.

Arar, Nedal H., Polly H. Noel, Luci Leykum, John E. Zeber, Raquel Romero, and Michael L. Parchman, "Implementing Quality Improvement in Small, Autonomous Primary Care Practices: Implications for The Patient-Centered Medical Home," *Quality in Primary Care,* Vol. 19, No. 5, 2011, pp. 289–300.

Backer, Thomas E., and Everett M. Rogers, "Diffusion of Innovations Theory and Work-Site AIDS Programs," *Journal of Health Communication,* Vol. 3, No. 1, 1998, pp. 17–28.

Bang, Heejung, and James M. Robins, "Doubly Robust Estimation in Missing Data and Causal Inference Models," *Biometrika,* Vol. 61, No. 4, 2005, pp. 962–973.

Baron, Reuben M., and David A. Kenny, "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic and Statistical Considerations," *Journal of Personality and Social Psychology,* Vol. 51, No. 6, 1986, pp. 1173–1182.

Bayoumi, Imaan, Michelle Howard, Anne M. Holbrook, and Inga Schabort, "Interventions to Improve Medication Reconciliation in Primary Care," *Annals of Pharmacotherapy,* Vol. 43, No. 10, 2009, pp. 1667–1675.

Berenson, Robert A., Kelly J. Devers, and Rachel A. Burton, "Will the Patient-Centered Medical Home Transform the Delivery of Health Care?" Urban Institute, August 2011.

Bice, Thomas W., and Stuart B. Boxerman, "A Quantitative Measure of Continuity of Care," *Medical Care,* Vol. 15, No. 4, 1977, pp. 347–349.

Birnberg, Jonathan M., Melinda L. Drum, Elbert S. Huang, Lawrence P. Casalino, Sarah E. Lewis, Anusha M. Vable, Hui Tang, Michael T. Quinn, Deborah L. Burnet, Thomas Summerfelt, and Marshall H. Chin, "Development of a Safety Net Medical Home Scale for Clinics," *Journal of General Internal Medicine,* Vol. 26, No. 12, 2011, pp. 1418–1425.

Bitton, Asaf, Carina Martin, and Bruce E. Landon, "A Nationwide Survey of Patient Centered Medical Home Demonstration Projects," *Journal of General Internal Medicine,* Vol. 25, No. 6, 2010, pp. 584–592.

Bleser, William K., Michelle Miller-Day, Dana Naughton, Patricia L. Bricker, Peter F. Cronholm, and Robert A. Gabbay, "Strategies for Achieving Whole-Practice Engagement and Buy-In to the Patient Centered Medical Home," *Annals of Family Medicine,* Vol. 12, No. 1, 2014, pp. 37–45.

Boult, Chad, Lisa Reider, Bruce Leff, Kevin D. Frick, Cynthia M. Boyd, Jennifer M. Wolff, Katherine Frey, Lya Karm, Stephen T. Wegener, Tracy Mroz, and Daniel O. Scharfstein, "The Effect of Guided Care Teams on the Use of Health Services: Results from a Cluster-Randomized Controlled Trial," *Archives of Internal Medicine,* Vol. 171, No. 5, 2011, pp. 460–466.

Boyd, Cynthia M., Chad Boult, Efrat Shadmi, Bruce Leff, Rosemarie Brager, Linda Dunbar, Jennifer L. Wolff, and Stephen Wegener, "Guided Care for Multimorbid Older Adults," *Gerontologist,* Vol. 47, No. 5, 2007, pp. 697–704.

Brown, Randall, "Strategies for Reining in Medicare Spending Through Delivery System Reforms: Assessing the Evidence and Opportunities," Mathematica Policy Research, September 2009.

Browne, Katherine, Deborah Roseman, Dale Shaller, and Susan Edgman-Levitan, "Analysis & Commentary: Measuring Patient Experience as a Strategy for Improving Primary Care," *Health Affairs,* Vol. 34, No. 10, 2015, pp. 921–925.

Burton, Rachel A., Kelly J. Devers, and Robert A. Berenson, *Patient-Centered Medical Home Recognition Tools: A Comparison of Ten Surveys' Content and Operational Details,* Washington, D.C.: The Urban Institute, 2012.

Byrd, Vivian L., Allison H. Dodd, Rosalie Malsberger, and Ashley Zlatinov, "Assessing the Usability of MAX 2008 Encounter Data for Enrollees in Comprehensive Managed Care," *Medicaid Policy Brief,* Brief 7, December 2012. Retrieved October 31, 2015, from http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/Downloads/MAX_IB7_EncounterData_071312.pdf

Carle, A. C., and R. Weech-Maldonado, "Does the Consumer Assessment of Healthcare Providers and Systems Cultural Competence Survey Provide Equivalent Measurement Across English and Spanish Versions?" *Medical Care,* Vol. 50, No. 9, Suppl. 2, 2012, pp. S37–S41.

Carle, Adam C., Robert Weech-Maldonado, and Quyen Ngo-Metzger, "Evaluating Measurement Equivalence Across Race and Ethnicity on the CAHPS Cultural Competence Survey," *Medical Care,* Vol. 50, No. 9, Suppl. 2, 2012, pp. S32–S36.

Carrier, Emily, Marc N. Gourevitch, and Nirav R. Shah, "Medical Homes: Challenges in Translating Theory into Practice," *Medical Care,* Vol. 47, No. 7, 2009, pp. 714–722.

Centers for Medicare and Medicaid Services, "Health Homes," web page, undated. As of October 23, 2015: http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Supports/Integrating-Care/Health-Homes/Health-Homes.html

———, "Federally Qualified Health Center (FQHC) Advanced Primary Care Practice Demonstration," web page, 2010. As of November 20, 2012: http://www.innovations.cms.gov/initiatives/FQHCs/index.html

———, "Federally Qualified Health Center (FQHC) Advanced Primary Care Practice Demonstration: Frequently Asked Questions (FAQs)," web page, 2011a. As of August 24, 2016: https://innovation.cms.gov/initiatives/fqhcs/fqhc-faqs.html

———, "Medicare Demonstrations: Details for Multipayer Advanced Primary Care Initiative," web page, 2011b. As of September 8, 2016: https://innovation.cms.gov/initiatives/Multi-payer-Advanced-Primary-Care-Practice/.

———, "Comprehensive Primary Care Initiative," web page, 2012. As of August 24, 2016: http://www.innovations.cms.gov/initiatives/Comprehensive-Primary-Care-Initiative/index.html

———, data file on quarterly claims-based beneficiary-level reports, 2014a.

———, data file on quarterly cost and utilization reports, 2014b.

———. data file on Federally Qualified Health Center site payment data, 2014c.

Charlson, Mary E., Peter Pompei, Kathy L. Ales, and C. Ronald MacKenzie, "A New Method of Classifying Prognostic Co-Morbidity in Longitudinal Studies: Development and Validation," *Journal of Chronic Diseases*, Vol. 40, No. 5, 1987, pp. 373–383.

Chen, Brian K., James Hibbert, Xi Cheng, and Kevin Bennett, "Travel Distance and Sociodemographic Correlates of Potentially Avoidable Emergency Department Visits in California, 2006–2010: An Observational Study," *International Journal for Equity in Health*, Vol. 14, No. 1, 2015, pp. 1–8.

CMS—*See* Centers for Medicare and Medicaid Services.

Commonwealth Fund, "The Patient-Centered Medical Home Evaluators' Collaborative," 2011. As of May 28, 2011: http://www.commonwealthfund.org/publications/other/2010/pcmh-evaluators-collaborative.

Community Care of North Carolina, "Our Results: Making Headway on Cost and Quality," web page, undated. As of August 16, 2016: http://www.communitycarenc.com/our-results/

Consumer Assessment of Healthcare Providers and Systems, "Patient Experience Measures from the CAHPS Clinician & Group Surveys," Doc. #1309, 2014. As of September 30, 2015: http://www.ahrq.gov/sites/default/files/wysiwyg/cahps/surveys-guidance/cg/survey3.0/measures_cg30_2309.pdf

———, "About the Patient-Centered Medical Home (PCMH) Item Set," Doc. #1314, 2011. As of September 30, 2015: http://www.ahrq.gov/sites/default/files/wysiwyg/cahps/surveys-guidance/item-sets/PCMH/about_pcmh-item-set-cg30-2314.pdf

Counsell, Steven R., Christopher M. Callahan, Anna B. Buttar, Daniel O. Clark, and Kathryn I. Frank, "Geriatric Resources for Assessment and Care of Elders (GRACE): A New Model of Primary Care for Low-Income Seniors," *Journal of the American Geriatrics Society*, Vol. 54, No. 7, 2006, pp. 1136–1141.

Counsell, Steven R., Christopher M. Callahan, Daniel O. Clark, Wanzhu Tu, Amna B. Buttar, Timothy Stump, and Gretchen D. Ricketts, "Geriatric Care Management for Low-Income Seniors," *Journal of the American Medical Association*, Vol. 298, No. 22, 2007, pp. 2623–2633.

Crabtree, Benjamin F., Paul A. Nutting, William L. Miller, Kurt C. Stange, Elizabeth E. Stewart, and Carlos Roberto Jaén, "Summary of the National Demonstration Project and Recommendations for the Patient-Centered Medical Home," *Annals of Family Medicine*, Vol. 8, Suppl. 1, 2010, pp. S80–S90.

Creswell, John W., Ann Carroll Klassen, Vicki L. Plano Clark, and Katherine Clegg Smith, "Best Practices for Mixed Methods Research in the Health Sciences," Office of Behavioral and Social Sciences Research, 2011. As of August 23, 2016: https://obssr-archive.od.nih.gov/mixed_methods_research/

Cronholm, Peter F., Judy A. Shea, Rachel M. Werner, Michelle Miller-Day, Jim Tufano, Benjamin F. Crabtree, and Robert Gabbay, "The Patient Centered Medical Home: Mental Models and Practice Culture Driving Transformation Process," *Journal of General Internal Medicine,* Vol. 28, No. 9, 2013, pp. 1195–1201.

David, Guy, Candace Gunnarsson, Phillip A. Saynisch, Ravi Chawla, and Somesh Nigam, "Do Patient-Centered Medical Homes Reduce Emergency Department Visits?" *Health Services Research,* Vol. 50, No. 2, 2015, pp. 418–439.

Denis, Jean-Louis., Yann Hébert, Ann Langley, Daniel Lozeau, and Louise-Hélène Trottier, "Explaining Diffusion Patterns for Complex Health Care Innovations," *Health Care Management Review,* Vol. 27, No. 3, 2002, pp. 60–73.

Derose, Kathryn Pitkin, Peter J. Mendel, Kartika Palar, David E. Kanouse, Ricky N. Bluthenthal, Laura Werber Castaneda, Dennis E. Corbin, Blanca X. Dominguez, Jennifer Hawes-Dawson, Michael A. Mata, and Clyde W. Oden, "Religious Congregations' Involvement in HIV: A Case Study Approach," *AIDS and Behavior,* Vol. 15, No. 6, 2011, pp. 1220–1232.

Deshpande, Maithili, Betty Chewning, David Mott, Joshua M. Thorpe, and Henry N. Young, "Asthma Medication Use Among U.S. Adults 18 and Older," *Research in Social and Administrative Pharmacy,* Vol. 10, No. 6, 2014, pp. e113–e123.

Devers, Kelly J., Nicole Cafarella Lallemand, Rachel A. Burton, Leila Kahwati, Nancy McCall, and Stephen Zuckerman, *Using Qualitative Comparative Analysis (QCA) To Study Patient-Centered Medical Homes*, Washington, D.C.: Urban Institute and RTI International, 2013. As of March 6, 2014: http://www.urban.org/research/publication/using-qualitative-comparative-analysis-qca-study-patient-centered-medical-homes

DeVries, A. C. H. Li, G. Sridhar, J. R. Hummel, S. Breidbart, and J. J. Barron, "Impact of Medical Homes on Quality, Healthcare Utilization, and Costs," *American Journal of Managed Care,* Vol. 18, No. 9, 2012, pp. 534–544.

Diedhiou, Abdoulaye, Janice C. Probst, James W. Hardin, Amy B. Martin, and Sudha Xirasgar, "Relationship Between Presence of a Reported Medical Home and Emergency Department Use Among Children with Asthma," *Medical Care Research and Review,* Vol. 67, No. 4, 2010, pp. 450–475.

DiMatteo, M. Robin, Cathy Donald Sherbourne, Ron D. Hays, Lynn Ordway, Richard L. Kravitz, Elizabeth A. McGlynn, Sherrie Kaplan, and William H. Rogers, "Physicians'

Characteristics Influence Patients' Adherence to Medical Treatment: Results from the Medical Outcomes Study," *Health Psychology,* Vol. 12, No. 2, 1993, pp. 93–102.

Donabedian, Avedis, *Explorations in Quality Assessment and Monitoring,* Vol. 1. *The Definition of Quality and Approaches to its Assessment,* Ann Arbor, Mich.: Health Administration Press, 1980.

———, *Explorations in Quality Assessment and Monitoring,* Vol. 2. *The Criteria and Standards of Quality,* Ann Arbor, Mich.: Health Administration Press, 1982.

———, "The Quality of Care: How Can It Be Assessed?" *Journal of the American Medical Association,* Vol. 260, No. 12, 1988, pp. 1743–1748.

Edwards, Samuel T., Asaf Bitton, Johan Hong, and Bruce E. Landon, "Patient-Centered Medical Home Initiatives Expanded in 2009–2013: Providers, Patients, and Payment Incentives Increased," *Health Affairs,* Vol. 33, No. 10: 2014, pp. 1823–1831.

Eisenhardt, Kathleen M., "Building Theories from Case Study Research," *Academy of Management Review,* Vol. 14, No. 4, 1989, pp. 532–550.

Elliott, Marc N., Allen Fremont, Peter A. Morrison, Phillip Pantoja, and Nicole Lurie, "A New Method for Estimating Race/Ethnicity and Associated Disparities Where Administrative Records Lack Self-Reported Race/Ethnicity," *Health Services Research,* Vol. 43, No. 5, Part 1, 2008, pp. 1722–1736.

Elliott, Marc N., Peter A. Morrison, Allen Fremont, Daniel F. McCaffrey, Phillip Pantoja, and Nicole Lurie, "Using the Census Bureau's Surname List to Improve Estimates of Race/Ethnicity and Associated Disparities," *Health Services and Outcomes Research Methodology,* Vol. 9, No. 2, 2009, pp. 69–83.

Farmer, Janet, Mary J. Clark, Elena Harlan Drewel, Theresa M. Swanson, and Bin Ge, "Consultative Care Coordination Through the Medical Home for CSHCN: A Randomized Controlled Trial," *Maternal and Child Health Journal,* Vol. 15, No. 7, 2011, pp. 1110–1118.

Federal Patient Centered Medical Home Collaborative, "Catalogue of Federal PCMH Activities," catalog, 2011.

Federally Qualified Health Center, "Federally Qualified Health Center Advanced Primary Care Practice Demonstration Terms and Conditions," undated. As of August 25, 2016: https://innovation.cms.gov/Files/Migrated-Medicare-Demonstration-x/FQHC-Terms_Conditions.pdf.

Flottemesch, Thomas J., Louise H. Anderson, Leif I. Solberg, Patricia Fontaine, and Stephen E. Asche, "Patient-Centered Medical Home Cost Reductions Limited to Complex Patients," *American Journal of Managed Care,* Vol. 18, No. 11, 2012, pp. 677–686.

Flottemesch, Thomas J., Patricia Fontaine, Stephen E. Asche, and Leif I. Solberg, "Relationship of Clinic Medical Home Scores to Health Care Costs," *Journal of Ambulatory Care Management,* Vol. 34, No. 1, 2011, pp. 78–89.

Friedberg, Mark W., "The Potential Impact of the Medical Home on Job Satisfaction in Primary Care: Comment on 'Patient-Centered Medical Home Characteristics and Staff Morale in Safety Net Clinics,'" *Archives of Internal Medicine,* Vol. 172, No. 1, 2012, pp. 31–32.

Friedberg, Mark W., Peter S. Hussey, and Eric. C. Schneider, "Primary Care: A Critical Review of the Evidence on Quality and Costs of Health Care," *Health Affairs,* Vol. 29, No. 5, 2010, pp. 766–772.

Friedberg, Mark W., Deborah J. Lai, Peter S. Hussey, and Eric C. Schneider, "A Guide to the Medical Home as a Practice-Level Intervention," *American Journal of Managed Care,* Vol. 15, No. 10, Suppl., 2009, pp. S291–S299.

Friedberg, Mark W., Meredith B. Rosenthal, Rachel M. Werner, Kevin G. Volpp, and Eric C. Schneider, "Effects of a Medical Home and Shared Savings Intervention on Quality and Utilization of Care," *JAMA Internal Medicine,* Vol. 175, No. 8, 2015, pp. 1362–1368.

Friedberg, Mark W., Dana G. Safran, Kathryn L. Coltin, Marguerite Dresser, and Erin C. Schneider, "Readiness for the Patient-Centered Medical Home: Structural Capabilities of Massachusetts Primary Care Practices," *Journal of General Internal Medicine,* Vol. 24, No. 2, 2009, pp. 162–169.

Friedberg Mark W., Erin C. Schneider, Meredith B. Rosenthal, Kevin G. Volpp, and Rachel M. Werner, "Association Between Participation in a Multipayer Medical Home Intervention and Changes in Quality, Utilization, and Costs Of Care," *Journal of the American Medical Association,* Vol. 311, No. 8, 2014, pp. 815–825.

Friedberg, Mark, Connie Sixta, and Michael Bailit, "Nature and Nurture: What's Behind the Variation in Recent Medical Home Evaluations?" *Health Affairs Blog,* June 19, 2015. As of August 16, 2016: http://healthaffairs.org/blog/2015/06/19/nature-and-nurture-whats-behind-the-variation-in-recent-medical-home-evaluations/

Future of Family Medicine Project Leadership Committee, "The Future of Family Medicine: A Collaborative Project of the Family Medicine Community," *Annals of Family Medicine,* Vol. 2, Suppl. 1, 2004, pp. S3–S32.

Gilfillan, R. J., J. Tomcavage, M. B. Rosenthal, D. E. Davis, J. Graham, J. A. Roy, S. B. Pierdon, T. R. Graf, R. Goldman, K. M. Weikel, B. H. Hamory, R. A. Paulus, and G. D. Steele, Jr., "Value and the Medical Home: Effects of Transformed Primary Care," *American Journal of Managed Care,* Vol. 16, No. 8, pp. 607–614.

Goroll, Allan H., Robert A. Berenson, Stephen C. Schoenbaum, and Laurence B. Gardner, "Fundamental Reform of Payment for Adult Primary Care: Comprehensive Payment for Comprehensive Care," *Journal of General Internal Medicine,* Vol. 22, No. 3, 2007, pp. 410–415.

Grant, D., L. Hooks, T. Turner, and T. Young, "Task 2: Federally Qualified Health Centers (FQHC) Work Plan: July 2013–June 2014," American Institutes for Research, forthcoming.

Greenhalgh, Trisha, Glenn Robert, Fraser MacFarlane, Paul Bate, and Olivia Kyriakidou, "Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations," *Milbank Quarterly,* Vol. 82, No. 4, 2004, pp. 581–629.

Groves, Robert M., Don A. Dillman, John L. Eltinge, and Roderick J.A. Little, eds., *Survey Nonresponse*, Wiley: New York, 2002.

Haas, Jennifer S., E. Francis Cook, Ann Louise Puopolo, Helen R. Burstin, Paul D. Cleary, and Troyen A. Brennan, "Is the Professional Satisfaction of General Internists Associated with Patient Satisfaction?" *Journal of General Internal Medicine,* Vol. 15, No. 2, 2000, pp. 122–128.

Harbrecht, Marjie G., and Lisa M. Latts, "Colorado's Patient-Centered Medical Home Pilot Met Numerous Obstacles, Yet Saw Results Such as Reduced Hospital Admissions," *Health Affairs,* Vol. 31, No. 9, 2012, pp. 2010–2017.

Haviland, Amelia M., Marc N. Elliott, Katrin Hambarsoomian, and Nicole Lurie, "Immunization Disparities by Hispanic Ethnicity and Language Preference," *Archives of Internal Medicine*, Vol. 171, No. 2, 2011, pp. 158–165.

Health Resources and Services Administration, "Find Shortage Areas: MUA/P by State and County," U.S. Department of Health and Human Services, web page, undated-a. As of October 23, 2015:
http://muafind.hrsa.gov/

———, "Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations," U.S. Department of Health and Human Services, web page, undated-b. As of October 23, 2015:
http://www.hrsa.gov/shortage/

———, "2014 Health Center Data," U.S. Department of Health and Human Services, web page, 2014. As of August 24, 2016:
http://bphc.hrsa.gov/uds/datacenter.aspx

Health Resources and Services Administration Health Center Program, "HRSA Accreditation and Patient-Centered Medical Home Recognition Initiative," U.S. Department of Health and

Human Services, web page, undated. As of October 23, 2015: http://bphc.hrsa.gov/qualityimprovement/clinicalquality/accreditation-pcmh/index.html

Healthcare Cost and Utilization Project, "Clinical Classifications Software (CCS) for ICD–9-CM," web page, undated. As of October 31, 2015: https://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

Helfrich, Christian D., Yu-Fang Li, Nancy D. Sharp, and Anne E. Sales, "Organizational Readiness to Change Assessment (ORCA): Development of an Instrument Based on the Promoting Action on Research in Health Services (PARIHS) Framework," *Implementation Science*, Vol. 4, No. 38, 2009.

Higgins S., R. Chawla, C. Colombo, R. Snyder, and S. Nigam, "Medical Homes and Cost and Utilization Among High-Risk Patients," *American Journal of Managed Care*, Vol. 20, No. 3, pp. e61–e71.

Hochberg, Yosef, "A Sharper Bonferroni Procedure for Multiple Tests of Significance," *Biometrika*, Vol. 75, No. 4, 1988, pp. 800–802.

Hoff, Timothy, "Medical Home Implementation: A Sensemaking Taxonomy of Hard and Soft Best Practices," *Milbank Quarterly*, Vol. 94, No. 1, 2013, pp. 771–810.

Hoff, Timothy, Wendy Weller, and Matthew DePuccio, "The Patient-Centered Medical Home: A Review of Recent Research," *Medical Care Research and Review*, Vol. 69, No. 6, 2012, pp. 619–644.

HRS—*See* Health and Retirement Study.

HRSA—*See* Health Resources and Services Administration.

Institute of Medicine, *Primary Care: America's Health in a New Era*, Washington, D.C.: National Academy of Sciences, 1996.

———, *Crossing the Quality Chasm. A New Health System for the 21st Century*, Washington, D.C.: Committee on Quality of Health Care in America, National Academy Press, 2001.

———, *Priority Areas for National Action: Transforming Health Care Quality*, Washington, D.C.: National Academy of Sciences, 2003.

———, *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America*, Washington, D.C.: National Academy of Sciences, 2012.

Jackson, George L., Benjamin J. Powers, Ranee Chatterjee, Janet Prvu Bettger, Alex R. Kemper, Vic Hasselblad, Rowena J. Dolor, R. Julian Irvine, Brooke L. Heidenfelder, Amy S. Kendrick, Rebecca Gray, and John W. Williams, Jr., "The Patient-Centered Medical Home: A Systematic Review," *Annals of Internal Medicine*, Vol. 153, No. 3, 2013, pp. 169–178.

Jackson, James S., Cleopatra Caldwell, David R. Williams, Harold W. Neighbors, Randolph M. Nesse, Robert Joseph Taylor, and Steven J. Trierweiler, "National Survey of American Life Self-Administered Questionnaire (NSAL-SAQ), February 2001–June 2003," Inter-University Consortium for Political and Social Research, 2010.

Jackson, James S., Myriam Torres, Cleopatra H. Caldwell, Harold W. Neighbors, Randolph M. Nesse, Robert Joseph Taylor, Steven J. Trierweiler, and David R. Williams, "The National Survey of American Life: A Study of Racial, Ethnic and Cultural Influences on Mental Disorders and Mental Health," *International Journal of Methods In Psychiatric Research*, Vol. 13, No. 4, 2004, pp. 196–207.

Jaén, Carlos Roberto, Benjamin F. Crabtree, Raymond F. Palmer, Robert L. Ferrer, Paul A. Nutting, William L. Miller, Elizabeth E. Stewart, Robert Wood, Marivel Davila, and Kurt C. Stange, "Methods for Evaluating Practice Change Toward a Patient-Centered Medical Home," *Annals of Family Medicine*, Vol. 8, Suppl. 1, pp. S9–S20.

Jaén, Carlos Roberto, Robert L. Ferrer, William L. Miller, Raymond F. Palmer, Robert Wood, Marivel Davila, Elizabeth E. Stewart, Benjamin F. Crabtree, Paul A. Nutting, and Kurt C. Stange, "Patient Outcomes at 26 Months in the Patient-Centered Medical Home National Demonstration Project," *Annals of Family Medicine*, Vol. 8, No. 1, 2010b, pp. S57–S67.

Jo, Booil, "Causal Inference in Randomized Experiments with Mediational Processes," *Psychological Methods*, Vol. 13, No. 4, 2008, pp. 314–336.

Joint Commission, "Revised Survey Eligibility Criteria for Ambulatory Health Care," 2014. As of February 12, 2016: http://www.jointcommission.org/assets/1/18/AHC_Eligibility_flyer.pdf

———, "Ambulatory Care Accreditation Overview: A Snapshot of the Accreditation Process," 2015. As of February 12, 2016: http://www.jointcommission.org/assets/1/18/AHC_Overview_Guide_2015.pdf

———, "Accreditation and Certification Decision Rules," 2016. As of February 12, 2016: http://www.jointcommission.org/assets/1/6/2016_Accreditation_Cert_Decision_Rules.pdf

Joint Commission, *Ambulatory Health Care: 2012 National Patient Safety Goals*, Oakbrook Terrace, Il.: The Joint Commission, 2012.

Jones, Craig, "Blueprint Integrated Pilot Programs: Building an Integrating System of Health," presentation at the National Medicaid Congress, Washington, D.C., June 2010.

Jones, Emily, Leiyu Shi, Arthur Seiji Hayashi, Ravi Sharma, Charles Daly, and Quyen Ngo-Metzger, "Access to Oral Health Care: The Role of Federally Qualified Health Centers in Addressing Disparities and Expanding Access," *American Journal of Public Health*, Vol. 103, No. 3, 2013, pp. 488–493.

Kahn, Katherine L., Justin W. Timbie, Mark W. Friedberg, Peter S. Hussey, Tara Lavelle, Peter Mendel, Liisa Hiatt, Beverly A. Weidmer, Aaron Kofner, Afshin Rastegar, J. Scott Ashwood, Ian Brantley, Denise D. Quigley, and Claude Messan Setodji, *Evaluation of CMS' FQHC APCP Demonstration: Final First Annual Report,* Santa Monica, Calif.: RAND Corporation, RR-886-CMS, 2015a. As of February 3, 2016: http://www.rand.org/pubs/research_reports/RR886.html

Kahn, Katherine L., Justin W. Timbie, Mark W. Friedberg, Tara Lavelle, Peter Mendel, J. Scott Ashwood, Liisa Hiatt, Ian Brantley, Beverly A. Weidmer, Afshin Rastegar, Aaron Kofner, Rosalie Malsberger, Mallika Kommareddi, Denise D. Quigley, and Claude Messan Setodji, *Evaluation of CMS's Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration: Final Second Annual Report,* Santa Monica, Calif: RAND Corporation, RR-886/1-CMS, 2015b. As of February 3, 2016: http://www.rand.org/pubs/research_reports/RR886z1.html

Kahn, Katherine L., Diana M. Tisnado, John L. Adams, Honghu Liu, Wen-Pin Chen, Fang Ashlee Hu, Carol M. Mangione, Ronald D. Hays, and Cheryl L. Damberg, "Does Ambulatory Process of Care Predict Health-Related Quality of Life Outcomes for Patients with Chronic Disease?" *Health Services Research,* Vol. 42, No. 1, Part 1, 2007, pp. 63–83.

Kaiser Family Foundation, "Medicare: The Essentials," web page, 2016. As of August 23, 2016: http://kff.org/slideshow/medicare-the-essentials/

Katz, Jeffrey N., Lily C. Chang, Oliver Sangha, Anne H. Fossel, and David W. Bates, "Can Comorbidity be Measured by Questionnaire Rather than Medical Record Review?" *Medical Care,* Vol. 34, No. 1, 1996, pp. 73–84.

Kern, L. M., R. V. Dhopeshwarkar, A. Edwards, and R. Kaushal, "Patient Experience over Time in Patient-Centered Medical Homes," *American Journal of Managed Care,* Vol. 19, No. 5, 2013, pp. 403–410.

Kern, Lisa M., Alison Edwards, and Rainu Kaushal, "The Patient-Centered Medical Home, Electronic Health Records, and Quality of Care," *Annals of Internal Medicine,* Vol. 160, No. 11, 2014, pp. 741–749.

——— "The Patient-Centered Medical Home and Associations with Health Care Quality and Utilization: A 5-Year Cohort Study," *Annals of Internal Medicine,* Vol. 164, No. 6, 2016, pp. 395–405.

Klein, David J., Marc N. Elliott, Amelia M. Haviland, Debra Saliba, Q. Burkhart, Carol Edwards, and Alan M. Zaslavsky, "Understanding Nonresponse to the 2007 Medicare CAHPS Survey," *Gerontologist,* Vol 51. No. 6, 2011, pp. 843–855.

Klein, Sarah, "The Veterans Health Administration: Implementing Patient-Centered Medical Homes in the Nation's Largest Integrated Delivery System," The Commonwealth Fund, September 2011.

Kosuke Imai, Luke Keele, and Dustin Tingley, "A General Approach to Causal Mediation Analysis," *Psychological Methods,* Vol. 15, No. 4, 2010, pp. 309–334.

Kroenke, Kurt, Robert L. Spitzer, Janet B. W. Williams, and Bernd Löwe, "An Ultra-Brief Screening Scale for Anxiety and Depression: The PHQ-4," *Psychosomatics,* Vol. 50, No. 6, 2009, pp. 613–621.

Kronick, Richard, and Karen Llanos, "Rate Setting for Medicaid Managed Long-Term Supports and Services: Best Practices and Recommendations for States," Center for Health Care Strategies, resource paper, 2008. As of June 1, 2011: http://www.chcs.org/usr_doc/Rate_Setting_for_Medicaid_MLTS.pdf

Laiteerapong, Neda, James Kirby, Yue Gao, Tzy-Chyi Yu, Ravi Sharma, Robert Nocon, Sang Mee Lee, Marshall H. Chin, Avina G. Nathan, Quyen Ngo-Metzger, and Elbert S. Huang, "Health Care Utilization and Receipt of Preventive Care for Patients Seen at Federally Funded Health Centers Compared to Other Sites of Primary Care," *Health Services Research,* Vol. 49, No. 5, 2014, pp. 1498–1518.

Lewin, Kurt, "Frontiers of Group Dynamics: Concept, Method, and Reality in Social Science, Social Equilibria, and Social Change," *Human Relations,* Vol. 1, No. 2, 1947, pp. 5–41.

Lewis, A., "Questioning the Widely Publicized Savings Reported for North Carolina Medicaid," *American Journal of Managed Care,* Vol. 18, No. 8, 2012, pp. e277–e279.

Li, Y., "Enrollment and Claims Received in MSIS (Medicaid Statistical Information System) Fiscal Year 2009," Excel file, 2012.

Linzer, Mark, Linda Baier Manwell, Eric S. Williams, James A. Bobula, Roger L. Brown, Anita B. Varkey, Bernice Man, Julia E. McMurray, Ann Macguire, Barbara Horner-Ibler, Mark D. Schwartz, and MEMO Investigators, "Working Conditions in Primary Care: Physician Reactions and Care Quality," *Annals of Internal Medicine,* Vol. 151, No. 1, 2009, pp. 28–36.

Litwin, Mark S., and Kimberly A. McGuigan, "Accuracy of Recall in Health-Related Quality-of-Life Assessment Among Men Treated for Prostate Cancer," *Journal of Clinical Oncology,* Vol. 17, No. 9, 1999, pp. 2882–2888.

Love, Margaret M., Arch G. Mainous III, Jeffery C. Talbert, and Gregory L. Hager, "Continuity of Care and the Physician-Patient Relationship," *Journal of Family Practice,* Vol. 49, No. 11, 2000, pp. 998–1004.

Maeng, D. D., J. Graham, T. R. Graf, J. N. Liberman, N. B. Dermes, J. Tomcavage, D. E. Davis, F. J. Bloom, G. D. Steele, Jr., "Reducing Long-Term Cost by Transforming Primary Care:

Evidence from Geisinger's Medical Home Model," *American Journal of Managed Care*, Vol. 18, No. 3, 2012, pp. 149–155.

Mainous, Arch G., III, and James M. Gill, "The Importance of Continuity of Care in the Likelihood of Future Hospitalization: Is Site of Care Equivalent to a Primary Clinician?" *American Journal of Public Health*, Vol. 88, No. 10, 1998, pp. 1539–1541.

Marsteller, Jill A., Yea-Jen Hsu, Lisa Reider, Katherine Frey, Jennifer Wolff, Cynthia Boyd, Bruce Leff, Lya Karm, Daniel Scharfstein, and Chad Boult, "Physician Satisfaction with Chronic Care Processes: A Cluster-Randomized Trial of Guided Care," *Annals of Family Medicine*, Vol. 8, No. 4, 2010, pp. 308–315.

Martsolf, Grant R., Ryan Kandrack, Robert A. Gabbay, and Mark W. Friedberg, "Cost of Transformation Among Primary Care Practices Participating in a Medical Home Pilot," *Journal of General Internal Medicine*, Vol. 31, No. 7, 2015, pp. 723–731.

Martsolf, Grant R., Ryan Kandrack, Eric C. Schneider, and Mark W. Friedberg, "Categories of Practice Transformation in a Statewide Medical Home Pilot and Their Association with Medical Home Recognition," *Journal of General Internal Medicine*, Vol. 30, No. 6, 2015, pp. 817–823.

McCarthy, Douglas, Kimberly Mueller, and Jennifer Wreen, "Geisinger Health System: Achieving the Potential of System Integration Through Innovation, Leadership, Measurement, and Incentives," Commonwealth Fund, 2009a.

———, "Group Health Cooperative: Reinventing Primary Care by Connecting Patients with a Medical Home," Commonwealth Fund, 2009b.

McMullen, Carmit K., Jennifer Schneider, Alison Firemark, James Davis, and Mark Spofford, "Cultivating Engaged Leadership Through a Learning Collaborative: Lessons from Primary Care Renewal in Oregon Safety Net Clinics," *Annals of Family Medicine*, Vol. 11, Suppl. 1, 2013, pp. S34–S40.

Medicare Federally Qualified Health Center Advanced Primary Care Practice Demonstration. "Consideration for Interested Practices," 2012a.

———, "Demonstration Partners," 2012b.

"Medicare Program; Revisions to Payment Policies Under the Physician Fee Schedule, DME Face-to-Face Encounters, Elimination of The Requirement for Termination of Non-Random Prepayment Complex Medical Review and Other Revisions to Part B for CY 20133," proposed rule, *Federal Register*, CMS-1590-P, 2012.

Mendel, Peter, Lisa S. Meredith, Michael Schoenbaum, Cathy D. Sherbourne, and Kenneth B. Wells, "Interventions in Organizational and Community Context: A Framework for Building Evidence on Dissemination and Implementation in Health Services Research,"

Administration and Policy in Mental Health and Mental Health Services Research, Vol. 35, No. 1, 2008, pp. 21–37.

Meyers, D., D. Peikes, S. Dale, E. Lundquist, and J. Genevro, *Improving Evaluations of the Medical Home*. AHRQ Publication No. 11-0091. Rockville, Md.: Agency for Healthcare Research and Quality, September 2011.

Milstein, Arnold, and Elizabeth Gilbertson, "American Medical Home Runs," *Health Affairs*, Vol. 28, No. 5, 2009, pp. 1317–1326.

Minnesota Department of Health, "Health Care Homes: Information for Providers," 2008. As of February 12, 2016: http://www.health.state.mn.us/healthreform/homes/about/docs/providers.pdf

———, "Health Care Homes Certification and Recertification," 2016a. As of February 12, 2016: http://www.health.state.mn.us/healthreform/homes/certification/certification/certificationflow.html

———, "Health Care Homes Certification and Recertification: Certification Step 1 Eligibility," 2016b. As of February 12, 2016: http://www.health.state.mn.us/healthreform/homes/certification/certification/eligibility.html

———, "Health Care Homes Certification and Recertification: Certification Step 8 MDH Notification," 2016c. As of February 12, 2016: http://www.health.state.mn.us/healthreform/homes/certification/certification/notification.html

Morgan, Robert O., Cayla R. Teal, Jennifer C. Hasche, Laura A. Petersen, Margaret M. Byrne, Debora A. Paterniti, and Beth A. Virnig, "Does Poorer Familiarity with Medicare Translate into Worse Access to Health Care?" *Journal of the American Geriatric Society,* Vol. 56, No. 11, 2008, pp. 2053–2060.

Murray, Christopher J., Sandeep Kulkarni, and Majid Ezzati, "Eight Americas: New Perspectives on U.S. Health Disparities," *American Journal of Preventive Medicine,* Vol. 29, No. 5, 2005, pp. 4–10.

Murray, Christopher J., Sandeep C. Kulkarni, Catherine Michaud, Niels Tomijima, Maria T. Bulzacchelli, Terrell J. Iandiorio, and Majid Ezzati, "Eight Americas: Investigating Mortality Disparities Across Races, Counties, and Race-Counties in The United States," *PLoS Medicine,* Vol 3, No. 9, 2006, p. e260.

Mukamel, Dana B., Laura M. White, Robert S. Nocon, Elbert S. Huang, Ravi Sharma, Leiyu Shu and Quyen Ngo-Metzger, "Comparing the Cost of Caring for Medicare Beneficiaries in Federally Funded Health Centers to Other Care Settings," *Health Services Research*, Vol. 51, No. 2, 2016, pp. 625–644.

National Association of Community Health Centers, "A Sketch of Community Health Centers: Chart Book December 2014," web page, 2014.

National Center for Medical Home Implementation, "Joint Principles of the Patient-Centered Medical Home," web page, 2007. As of May 31, 2011: http://www.medicalhomeinfo.org/downloads/pdfs/jointstatement.pdf

National Committee for Quality Assurance, "PCMH Eligibility," web page, undated. As of February 12, 2016: http://www.ncqa.org/Programs/Recognition/Practices/PatientCenteredMedicalHomePCMH/BeforeLearnItPCMH/PCMHEligibility.aspx#

———, "Standards and Guidelines for Physician Practice Connections Patient-Centered Medical Home (PPC-PCMH)," 2008.

———, Biannual NCQA RAS Reports, Truven Analytics, 2011–2014.

———, "Patient-Centered Medical Home (PCMH) 2011 Draft Standards," 2011a. As of June 1, 2011: https://dss.mo.gov/mhd/cs/health-homes/pdf/pcmh_2011-overview.pdf

———, "NCQA's Patient-Centered Medical Home (PCMH) 2011," web page, 2011b. As of February 16, 2016: https://www.ncqa.org/Portals/0/Programs/Recognition/PCMH_2011_Overview_5.2.pdf

———, "NCQA PCMH 2011 Standards, Elements, and Factors: Documentation Guideline/Data Sources," 2012.

———, NCQA PCMH recognition data file, Truven Analytics, 2013.

———, "PCMH 2011-PCMH 2014 Crosswalk," 2014. As of June 1, 2015: http://www.ncqa.org/programs/recognition/practices/patient-centered-medical-home-pcmh/pcmh-2011-pcmh-2014-crosswalk.

———, Technical Assistance Participation Lists, Truven Analytics, 2014.

National Heart, Lung, and Blood Institute, "Calculate Your Body Mass Index," web page, undated. As of August 16, 2016: http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm

National Institute on Aging, "Health and Retirement Study: Sample Sizes and Response Rates," 2011.

NCQA—*See* National Committee for Quality Assurance.

Neergaard, Mette Asbjoern, Frede Oleson, Rikke Sand Andersen, and Jens Sondergaard, Qualitative Description: The Poor Cousin of Health Research?" *BMC Medical Research Methodology,* Vol. 9, No. 52, 2009.

NHLBI—*See* National Heart, Lung, and Blood Institute.

Nutting, Paul A., Benjamin F. Crabtree, Elizabeth E. Stewart, William L. Miller, Raymond F. Palmer, Kurt C. Stange, and Carlos Roberto Jaén, "Effect of Facilitation on Practice Outcomes in the National Demonstration Project Model of the Patient-Centered Medical Home," *Annals of Family Medicine,* Vol. 8, Suppl. 1., 2010, pp. S33–S44.

Nutting, Paul A., William L. Miller, Benjamin F. Crabtree, Carlos Roberto Jaén, Elizabeth E. Stewart, and Kurt C. Stange, "Initial Lessons from the First National Demonstration Project on Practice Transformation to a Patient-Centered Medical Home," *Annals of Family Medicine,* Vol. 7, No. 3, 2009, pp. 254–260.

O'Connor, A., and G. A. Wellenius, "Rural-Urban Disparities in the Prevalence of Diabetes and Coronary Heart Disease," *Public Health,* Vol. 126, No. 10, 2012, pp. 813–820.

O'Malley, A. S., D. Peikes, et al., *Making Medical Homes Work : Qualifying a Physician Practice as a Medical Home*, Washington, D.C.: Center for Studying Health System Change, Mathematica Policy Research, 2008.

O'Malley, Ann S., Rebecca Gourevitch, Kevin Draper, Amelia Bond, and Manasi A. Tirodkar, "Overcoming Challenges to Teamwork in Patient-Centered Medical Homes: A Qualitative Study," *Journal of General Internal Medicine,* Vol. 30, No. 183, 2014, pp. 183–192.

Oregon Health Authority, "Patient-Centered Primary Care Home Program: Become Recognized," web page, undated. As of February 12, 2016: http://www.oregon.gov/oha/pcpch/Pages/become-recognized.aspx

Oregon Health Authority, "Patient-Centered Primary Care Home Program: Payment Incentives," web page, 2014. As of February 12, 2016: http://www.oregon.gov/oha/pcpch/Pages/payment-incentives.aspx

Patel, Urvashi B., Carl Rathjen, and Elizabeth Rubin, "Horizon's Patient-Centered Medical Home Program Shows Practices Need Much More than Payment Changes to Transform," *Health Affairs (Project Hope),* Vol. 31, No. 9, 2012, pp. 2018–2027.

Patient-Centered Medical Home Resource Center, "Catalogue of Federal PCMH Activities," 2011.

Patient-Centered Primary Care Collaborative, "Defining the Medical Home," web page, undated. As of April 2016: http://www.pcpcc.net/content/joint-principles-patient-centered-medical-home

———, *Proof in Practice: A Compilation of Patient Centered Medical Home Pilot and Demonstration Projects*, Washington, D.C: Patient-Centered Primary Care Collaborative, 2009.

———, *Collaborative members*, 2011a.

———, *Practices in the Spotlight: The Medical Home and Diabetes Care*, Washington, D.C., Patient-Centered Primary Care Collaborative, 2011b.

———, *Pilots & Demonstrations (Self-Reported)*, Washington, D.C., Patient-Centered Primary Care Collaborative, 2012.

Paulus, Ronald A., Karen Davis, and Glenn D. Steele, "Continuous Innovation in Health Care: Implications of the Geisinger Experience," *Health Affairs*, Vol. 27, No. 5, 2008, pp. 1235–1245.

Paustian Michael L., Jeffrey A. Alexander, Darline K. El Reda, Chris G. Wise, Lee A. Green, and Michael D. Fetters, "Partial and Incremental PCMH Practice Transformation: Implications for Quality and Costs," *Health Services Research*, Vol. 49, No. 1, 2014, pp.52–74.

PCPCC—*See* Patient-Centered Primary Care Collaborative.

Peikes, Deborah, Arnold Chen, Jennifer Schore, and Randall Brown, "Effects of Care Coordination on Hospitalization, Quality of Care, and Health Care Expenditures Among Medicare Beneficiaries," *Journal of the American Medical Association*, Vol. 301, No. 6: 2009, pp. 603–618.

Peikes, Deborah, Stacy Dale, Eric Lundquist, Janice Genevro, and David Meyers, "Building the Evidence Base for the Medical Home: What Sample and Sample Size Do Studies Need?" white paper, Rockville, Md.:, Mathematica Policy Research, 2011.

Peikes, Deborah, Janice Genevro, Sarah Scholle, and Phyllis Torda, "The Patient-Centered Medical Home: Strategies to Put Patients at The Center of Primary Care," AHRQ Publication No. 11-0029, Rockville, Md.: Agency for Healthcare Research and Quality, 2011.

Peikes, Deborah, Aparajita Zutshi, Janice L. Genevro, Michael L. Parchman, and David S. Meyers, "Early Evaluations of the Medical Home: Building on a Promising Start," *American Journal of Managed Care*, Vol. 18, No. 2, 2012, pp. 105–116.

Pope, Catherine, Sue Ziebland, and Nicholas Mays, "Analysing Qualitative Data," *British Medical Journal*, Vol. 320, No. 7227) 2000, pp. 114–116.

Prela, Cecilia M., Greg A. Baumgardner, Gayle E. Reiber, Lynne V. McFarland, Charles Maynard, Nancy Anderson, and Matthew Maciejewski, "Challenges in Merging Medicaid and Medicare Databases to Obtain Healthcare Costs for Dual-Eligible Beneficiaries: Using Diabetes as an Example," *Pharmacoeconomics*, Vol. 27, No. 2, 2009, pp. 167–177.

Public Law 74-271, Social Security Act, August 14, 1935.

Public Law 78-410, Public Health Service Act, July 1, 1944.

Public Law 101-239, Omnibus Budget Reconciliation Act of 1989, October 13, 1989.

Public Law 111-5, American Recovery and Reinvestment Act, February 17, 2009.

Public Law 111-148, Patient Protection and Affordable Care Act, March 23, 2010.

Puhani, Patrick A., "The Treatment Effect, the Cross Difference, and the Interaction Term in Nonlinear 'Difference-In-Differences' Models," *Economics Letters*, Vol. 115, No. 1, 2012, pp. 85–87.

Quinn, Mariah A., Allison Wilcox, E. John Orav, David W. Bates, and Steven R. Simon, "The Relationship Between Perceived Practice Quality and Quality Improvement Activities and Physician Practice Dissatisfaction, Professional Isolation, and Work-Life Stress," *Medical Care*, Vol. 47, No. 8, 2009, pp. 924–928.

Ragin, Charles C., *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies*, Berkeley, Calif.: University of California Press, 1987.

R Core Team, "The R Project for Statistical Computing," R Foundation for Statistical Computing, web page, undated. As of August 16, 2016: http://www.R-project.org/

Raskas, Ruth S., Lisa M. Latts, Jill R. Hummel, Douglas Wenners, Harlan Levine, and Sam R. Nussbaum, "Early Results Show Wellpoint's Patient-Centered Medical Home Pilots Have Met Some Goals for Costs, Utilization, and Quality," *Health Affairs (Project Hope)*, Vol. 31, No. 9, 2012, pp. 2002–2009.

Reid, Robert J., Katie Coleman, Eric A. Johnson, Paul A. Fishman, Clarissa Hsu, Michael P. Soman, Claire E. Trescott, Michael Erikson, and Eric B Larson, "The Group Health Medical Home at Year Two: Cost Savings, Higher Patient Satisfaction, and Less Burnout for Providers," *Health Affairs*, Vol. 29, No. 5, 2010, pp. 835–843.

Reid, Robert J., Paul A. Fishman, Onchee Yu, Tyler R. Ross, James T. Tufano, Michael P. Soman, and Eric B. Larson, "Patient-Centered Medical Home Demonstration: A Prospective, Quasi-Experimental, Before and After Evaluation," *American Journal of Managed Care*, Vol. 15, No. 9, 2009, pp. e71–e87.

Research Triangle International, data file from portal logons, undated.

Rihoux, Benoît, and Charles C. Ragin, *Configurational Comparative Methods: Qualitative Comparative Analysis and Related Techniques*, Thousand Oaks, Calif.: Sage Publications, 2009.

Roby, Dylan H., Nadereh Pourat, Matthew J. Pirritano, Shelley M. Vrungos, Himmet Dajee, Dan Castillo, and Gerald F. Kominski, "Impact of Patient-Centered Medical Home Assignment

on Emergency Room Visits Among Uninsured Patients in a County Health System," *Medical Care Research and Review,* Vol. 67, No. 4, 2010, pp. 412–430.

Rodriguez, Hector P., William H. Rogers, Richard E. Marshall, and Dana Gelb Safran, "The Effects of Primary Care Physician Visit Continuity on Patients' Experiences with Care," *Journal of General Internal Medicine,* Vol. 22, No. 6, 2007, pp. 787–793.

Rodriguez, Hector P., Ted von Glahn, Marc N. Elliott, William H. Rogers, and Dana G. Safran, "The Effect of Performance-Based Financial Incentives on Improving Patient Care Experiences: A Statewide Evaluation," *Journal of General Internal Medicine,* Vol. 24, No. 12, 2009, pp. 1281–1288.

Rogers, Everett M., *Diffusion of Innovations,* 5th ed., New York: Free Press, 2003.

Rosenberg, Cynthia Napier, Pamela Peele, Donna Keyser, Sandra McAnallen, and Diane Holder, "Results from a Patient-Centered Medical Home Pilot at UPMC Health Plan Hold Lessons for Broader Adoption of the Model," *Health Affairs (Project Hope),* Vol. 31, No. 11, 2012, pp. 2423–2431.

Rosenthal, Meredith B., Melinda K. Abrams, Asaf Bitton, and the Patient-Centered Medical Home Evaluators' Collaborative, "Recommended Core Measures for Evaluating the Patient-Centered Medical Home: Cost, Utilization, and Clinical Quality," data brief, May 2012.

Rosenthal, Meredith B., Shehnaz Alidina, Mark W. Friedberg, Sara J. Singer, Diana Eastman, Zhonghe Li, and Eric C. Schneider, "A Difference-In-Difference Analysis of Changes in Quality, Utilization and Cost Following the Colorado Multi-Payer Patient-Centered Medical Home Pilot," *Journal of General Internal Medicine,* Vol. 31, No. 3, 2015, pp. 289–296.

Rosenthal, Meredith B., Howard B. Beckman, Deb Dauser Forrest, Elbert S. Huang, Bruce E. Landon, and Sarah Lewis, "Will the Patient-Centered Medical Home Improve Efficiency and Reduce Costs of Care? A Measurement and Research Agenda," *Medical Care Research and Review,* Vol. 67, No. 4, 2010, pp. 476–484.

Rosenthal Meredith B., Mark W. Friedberg, Sara J. Singer, Diana Eastman, Zhonghe Li, and Eric C. Schneider, "Effect of a Multipayer Patient-Centered Medical Home on Health Care Utilization and Quality: The Rhode Island Chronic Care Sustainability Initiative Pilot Program," *JAMA Internal Medicine,* Vol. 173, No. 20, 2013, pp. 1907–1913.

Rosenthal, Thomas C., "The Medical Home: Growing Evidence to Support a New Approach to Primary Care," *Journal of the American Board of Family Medicine,* Vol. 21, No. 5, 2008, pp. 427–440.

RTI—*See* Research Triangle International.

Safety Net Medical Home Initiative, "About the Initiative," web page, undated. As of October 23, 2015:
http://www.safetynetmedicalhome.org/about-initiative

Sandelowski, Margarete, "Whatever Happened to Qualitative Description?" *Research in Nursing & Health*, Vol. 23, 2000, pp. 333–340.

Saultz, John W., and Jennifer Lochner, "Interpersonal Continuity of Care and Care Outcomes: A Critical Review," *Annals of Family Medicine*, Vol. 3, No. 2, 2005, pp. 159–166.

Scholle, Sarah Hudson, Carol S. Weisman, Roger T. Anderson, and Fabian Camacho, "The Development and Validation of the Primary Care Satisfaction Survey for Women," *Women's Health Issues*, Vol. 14, No. 2, 2004, pp. 35–50.

Schraeder, Cheryl, Donna Dworak, John Stoll, Chris Kucera, Valerie Waldschmidt, and Melissa Pollard Dworak, "Managing Elders with Comorbidities," *Journal of Ambulatory Care Management*, Vol. 28, No. 3, 2005, pp. 201–209.

Sia, Calvin, Thomas F. Tonniges, Elizabeth Osterhus, and Sharon Taba, "History of the Medical Home Concept," *Pediatrics*, Vol. 113, Suppl. 4, 2004, pp. 1473–1478.

Silverman, Elaine M., Jonathan S. Skinner, and Elliott S. Fisher, "The Association Between For-Profit Hospital Ownership and Increased Medicare Spending," *New England Journal of Medicine*, Vol. 341, No. 6, 1999, pp. 420–426.

Singh, Hardeep, and Mark L. Graber, "Reducing Diagnostic Error Through Medical Home−Based Primary Care Reform," *Journal of the American Medical Association*, Vol. 204, No. 4, 2010, pp. 463–464.

Singh, Hardeep, Mark L. Graber, Stephanie M. Kissam, Asta V. Sorenson, Nancy F. Lenfestey, Elizabeth M. Tant, Kerm Henriksen, and Kenneth A. Labresh, "System-Related Interventions to Reduce Diagnostic Errors: A Narrative Review," *BMJ Quality & Safety*, Vol. 21, No. 2, 2012, pp. 160–170.

Sinsky, Christine A., Rachel Willard-Grace, Andrew M. Schutzbank, Thomas A. Sinsky, David Margolius, and Thomas Bodenheimer, "In Search of Joy in Practice: A Report of 23 High-Functioning Primary Care Practices," *Annals of Family Medicine*, Vol. 11, No. 3, 2013, pp. 272–278.

SNMHI—*See* Safety Net Medical Home Initiative.

Solberg, Leif I., Stephen E. Asche, Patricia Fontaine, Thomas J. Flottemesch, L. Gregory Pawlson, and Sarah Hudson Scholle, "Relationship of Clinic Medical Home Scores to Quality and Patient Experience," *Journal of Ambulatory Care Management*, Vol. 34, No. 1, 2011, pp. 57–66.

Starfield, Barbara, Leiyu Shi, and James Macinko, "Contribution of Primary Care to Health Systems and Health," *Milbank Quarterly*, Vol. 83, No. 3, 2005, pp. 457–502.

Steiner, Beat D., Amy C. Denham, Evan Ashkin, Warren P. Newton, Thomas Wroth, and L. Allen Dobson, Jr., "Community Care of North Carolina: Improving Care Through Community Health Networks," *Annals of Family Medicine,* Vol. 6, No. 4, 2008, pp. 361–367.

Takach, Mary, "About Half of The States Are Implementing Patient-Centered Medical Homes for Their Medicaid Populations," *Health Affairs,* Vol. 31, No. 11, pp. 2012, pp. 2432–2440.

Taylor, Erin Fries, Deborah Peikes, Janice Genevro, and David Meyers, *Creating Capacity for Improvement in Primary Care: The Case for Developing a Quality Improvement Infrastructure*, Rockville, Md.: Agency for Healthcare Research and Quality, 2013.

Thygeson, Neis Marcus, Leif I. Solberg, Stephen E. Asche, Patricia Fontaine, Leonard Gregory Pawlson, and Sarah Hudson Scholle, "Using Fuzzy Set Qualitative Comparative Analysis (fs/QCA) to Explore the Relationship Between Medical 'Homeness' and Quality," *Health Services Research*, Vol. 47, No. 1, Part 1, 2012, pp. 22–45.

Toseland, Ronald W., John. C. O'Donnell, Joseph B. Engelhardt, Scott Hendler, Jill Richie, and Donald Jue, "Outpatient Geriatric Evaluation and Management: Results of a Randomized Trial," *Medical Care,* Vol. 34, No. 6, 1996, pp. 624–640.

Tuepker, Anaïs, Devan Kansagara, Eleni Skaperdas, Christina Nicolaidis, Sandra Joos, Michael Alperin, and David Hickam, "'We've Not Gotten Even Close to What We Want to Do': A Qualitative Study of Early Patient-Centered Medical Home Implementation," *Journal of General Internal Medicine,* Vol. 29, Suppl. 2, 2014, pp. 614–622.

U.S. Department of Health and Human Services, "The Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives For 2020. Phase I Report: Recommendations for the Framework and Format Of Healthy People 2020," 2008. As of November 1, 2015:
http://www.healthypeople.gov/sites/default/files/PhaseI_0.pdf

Wageman, Ruth, J. Richard Hackman, and Erin Lehman, "Team Diagnostic Survey: Development of an Instrument," *Journal of Applied Behavioral Science,* Vol. 41, No. 4, 2005, pp. 373–398.

Wagner, Edward H., Katie Coleman, Robert J. Reid, Kathryn Phillips, and Jonathan R. Sugarman, "Guiding Transformation: How Medical Practices Can Become Patient Centered Medical Homes," Commonwealth Fund, 2012.

Wang, Qiyuan C., Ravi Chawla, Christine M. Colombo, Richard L. Snyder, and Somesh Nigam, "Patient-Centered Medical Home Impact on Health Plan Members with Diabetes," *Journal of Public Health Management and Practice,* Vol. 20, No. 5, 2014, pp. E12–E20.

Wang, Rui, Stephen W. Lagakos, James H. Ware, David J. Hunter, and Jeffrey M. Drazen, "Statistics in Medicine—Reporting of Subgroup Analyses in Clinical Trials," *New England Journal of Medicine,* Vol. 357, No. 21, 2007, pp. 2189–2194.

Weech-Maldonado, Robert, Adam Carle, Beverly Weidmer, Margarita Hurtado, Quyen Ngo-Metzger, and Ron D. Hays, "The Consumer Assessment of Healthcare Providers and Systems (CAHPS) Cultural Competence (CC) Item Set," *Medical Care,* Vol. 50, No. 9, Suppl. 2, pp. S22–S31.

Weick, Karl E., and Robert E. Quinn, "Organizational Change and Development," *Annual Review of Psychology,* Vol. 50, 1999, pp. 361–386

Weidmer, Beverly A., Cindy Brach, and Ron D. Hays, "Development and Evaluation of CAHPS Survey Items Assessing How Well Healthcare Providers Address Health Literacy," *Medical Care,* Vol. 50, No. 9, Suppl. 2, 2012, pp. S3–S11.

Weiner, Bryan J., Hakke Amick, and Shoou-Yih Daniel Lee, "Conceptualization and Measurement of Organizational Readiness for Change: A Review of the Literature In Health Services Research and Other Fields," *Medical Care Research and Review,* Vol. 65, No. 4, 2008, pp. 379–436.

Weissman, Sharon, Wayne A. Duffus, Medha Iyer, Hrishikesh Chakraborty, Ashok Varma Samantapudi, and Helmut Albrecht, "Rural-Urban Differences in HIV Viral Loads nd Progression to AIDS Among New HIV Cases," *Southern Medical Journal,* Vol. 108, No. 3, 2015, pp. 180–188.

Wise, Christopher G., Jeffrey A. Alexander, Lee A. Green, Genna R. Cohen, and Christina R. Koster, "Journey Toward a Patient-Centered Medical Home: Readiness for Change in Primary Care Practices," *Milbank Quarterly,* Vol. 89, No. 3, 2011, pp. 399–424.

Wise, Christopher G., Vinita Bahl, Rita Mitchell, Brady T. West, and Thomas Carli, "Population-Based Medical and Disease Management: An Evaluation of Cost and Quality," *Disease Management,* Vol. 9, No. 1, 2006, pp. 45–55.

Word, David L., Charles D. Coleman, Robert Nunziata, and Robert Kominski, "Demographic Aspects of Surnames from Census 2000," U.S. Department of Commerce, Census Bureau, 2008. As of August 16, 2016: https://www2.census.gov/topics/genealogy/2000surnames/surnames.pdf

"Work Plan for the Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration: Web Portal and Practice Feedback Reports," Prepared by RTI International, July 30, 2012.

Wright, Brad, Andrew J. Potter, and Amal Trivedi, "Federally Qualified Health Center Use Among Dual Eligibles: Rates of Hospitalizations and Emergency Department Visits," *Health Affairs*, Vol. 34, No. 7, 2015, pp. 1147–1155. As of November 1, 2015: http://content.healthaffairs.org/content/34/7/1147.full.pdf

Yin, Robert K., *Case Study Research: Design and Methods*, 5th ed., Thousand Oaks, Calif.: Sage Publications, 2013.

Zickafoose, Joseph S., Sarah J. Clark, Joseph W. Sakshaug, Lena M. Chen, and John M. Hollingsworth, "Readiness of Primary Care Practices for Medical Home Certification," *Pediatrics*, Vol. 131, No. 3, 2013, pp. 473–482.