MATHEMATICA Policy Research

REPORT

Evaluation of the Comprehensive Primary Care Initiative: Second Annual Report

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EXECUTIVE SUMMARY

In October 2012, the Center for Medicare & Medicaid Innovation (CMMI) of the Centers for Medicare & Medicaid Services (CMS) launched the Comprehensive Primary Care (CPC) initiative. This unique collaboration between CMS and other private and public payers—including commercial insurers and Medicaid managed care plans—aims to improve primary care delivery and achieve better care, smarter spending, and healthier people. CPC also aims to enhance provider experience.

CPC tests a new approach to care delivery for nearly 500 primary care practices across seven regions. The initiative focuses on helping practices implement five key functions in their delivery of care: (1) access and continuity, (2) planned care for chronic conditions and preventive care, (3) risk-stratified care management, (4) patient and caregiver engagement, and (5) coordination of care across the medical neighborhood (Figure ES.1). These functions are considered a primary driver in achieving the CPC aims, as specified in the CPC change package.[1] CMS specified a series of Milestones to help move practices along the path of implementing these functions, and it updates the requirements for each Milestone annually to build on practices' progress in the prior year. CMS assesses whether practices meet targets set within the Milestones, which are considered minimum requirements to remain in the program. While the CPC Milestones overlap with many of the activities typically included in existing patient-centered medical home (PCMH) recognition programs, CPC did not require practices to have or obtain PCMH recognition. To help participating practices meet the Milestone requirements and make the changes in care delivery outlined in the CPC change package, CMS offers support, including enhanced payment, data feedback, and learning activities.

Figure ES.1. The five functions of Comprehensive Primary Care

CPC presents a unique opportunity to evaluate an enhanced approach to primary care payment and care delivery in a large and diverse set of practices within a multipayer framework.

Roadmap of report

This report focuses on CPC's second program year (January through December 2014), examining how practices implemented CPC and altered health care delivery during that year, and estimating the effects on patient experience, cost, service use, and quality-of-care outcomes over the first 24 months of CPC, using the most recent data available. This report is organized as follows:

[1] The CPC change package describes the underlying logic of CPC, including the primary and secondary drivers to achieve the aims of CPC and the concepts and tactics that support the changes. It is available at: https://innovation.cms.gov/Files/x/cpcidiagram.pdf.

- In Chapter 1, we provide a brief overview of the CPC initiative and a high-level description of how we are evaluating its implementation and impact.
- In Chapter 2, we describe participation in CPC by region, payers, practices, and patients, and detail how that participation has changed over time.
- In Chapter 3, we outline the supports that CPC provides to practices for changing care delivery and providing comprehensive primary care.
- In Chapter 4, we profile how CPC's payers, practices, and other stakeholders work together on reaching the goals of CPC.
- In Chapter 5, we examine in detail how participating practices are changing care delivery under CPC.
- In Chapter 6, we outline changes in experience with health care over time of Medicare fee-for-service (FFS) patients in CPC practices relative to patients in comparison practices.
- In Chapter 7, we describe CPC's effects to date on claims-based health care costs, service use, and quality of care, for Medicare FFS patients in CPC practices relative to patients in comparison practices.
- In Chapter 8, we assess the extent to which practice-specific changes in primary care delivery since program startup are related to changes in the practice's hospitalization rates.

Overview of findings

CPC's second program year saw stable participation among payers and practices, as well as notable progress in the initiative's implementation. CPC's financial support for participating practices in PY2014 remained substantial and comparable to PY2013 levels, with the median practice receiving enhanced CPC payments (from all participating payers combined) equivalent to 14 percent of 2014 total practice revenue, or $203,949. Continued refinement of data feedback and the learning supports provided to practices occurred over the period, and, in general, practices were pleased with the changes.

Practices spent much of CPC's first program year (PY) (PY2013, defined as fall 2012 through December 2013) trying to understand CPC and set up staffing, care processes, and workflows. In PY2014 (January through December 2014), practices made substantial headway in CPC Milestone activities and changing care delivery. Qualitative data from a small number of participating practices point to a stronger understanding of the goals of CPC in 2014, more robust staffing and systematic care processes for implementing the changes identified in the CPC change package, and the adoption of various enhanced approaches to delivering care compared to CPC's first program year. Indeed, data collected from all CPC practices demonstrate progress in the Milestone activities and the CPC change package more generally, with improvement in their self-reported approaches to delivering various aspects of primary care. The biggest improvements were in the delivery of risk-stratified care management and expanded access to care.

As is to be expected at this stage of the initiative, practices have experienced some challenges in changing care delivery and have more work to do during the remaining two years of the initiative. Qualitative data collected from a small number of practices show several common challenges of transformation, such as difficulties in changing workflows and procedures, incorporating new staff roles such as care managers into the primary care team, and communicating with other providers when a lack of interoperability exists.

Despite being only midway through the four-year initiative, CPC's care delivery improvements are generating small improvements in outcomes for Medicare FFS beneficiaries, the focus of our quantitative evaluation. Between its first and second year, CPC appears to have had small, statistically significant favorable effects on the percentage of respondents in CPC practices choosing the most favorable ratings for three of six composite measures of patient experience over time relative to respondent ratings of comparison practices: (1) getting timely appointments, care, and information (2.1 percentage points, $p = 0.046$); (2) providers supporting patients in taking care of their own health (3.8 percentage points, $p = 0.000$); and (3) shared decision making (3.2 percentage points, $p = 0.006$). Thus, the findings suggest that the substantial changes in CPC practices' staffing, care processes, and workflows did not worsen patient experience in the short run, and even improved it modestly.

Turning to effects on Medicare fee-for-service expenditures, CPC reduced average monthly Medicare expenditures without care management fees by a statistically significant $11 per beneficiary per month (PBPM), or 1 percent ($p = 0.074$), over the initiative's first two years, with the 90 percent confidence interval ranging from a reduction of $1 to $21. Based on the total number of eligible beneficiary months among beneficiaries attributed to CPC practices in the first two years, the impact estimate of $11 per beneficiary per month translates to an estimated cumulative savings in Medicare expenditures without fees of $91.6 million. These cost reductions are driven by reductions in service use, especially hospitalizations and skilled nursing facility. While not a large component of total expenditures, there was also a 3 percent reduction in primary care visits ($p < 0.01$). Non-billable calls, emails, and care management interactions, supported by the CPC fees, may have supplanted or reduced the need for primary care office visits. There was no effect on visits to specialists.

Although these findings are promising, CPC has not generated savings net of care management fees. The average PBPM fee paid was $18 (less than the average of $20 CMS paid for attributed beneficiaries because we follow beneficiaries even if the practice no longer receives fees for them). A one-sided equivalence test does not support the conclusion that reductions in expenditures without fees exceeded the $18 PBPM payments ($p = 0.87$). The change in average expenditures including the care management fees was $7 higher for CPC than comparison beneficiaries ($p = 0.27$, 90 percent CI -$3, $17). Our estimates based on Bayesian analysis also suggest a near certainty that Medicare FFS expenditures have been reduced relative to what they would have been in the absence of CPC, but only a 4 percent likelihood that those reductions exceed the $18 PBPM needed to cover the care management fee. CPC had minimal effects on the limited claims-based quality-of-care process and outcome measures we examined.

The improvements CPC practices made in their approaches to delivering various aspects of primary care, as reported by each practice on the modified PCMH Assessment (PCMH-A) survey of practices, were associated with reductions in their hospitalization rates in CPC's

second year relative to the baseline year before CPC. Each 1-point improvement in the 12-point index of 37 PCMH-A items was associated with an additional decline of 1.15 percent in the hospitalization rate. Improvements in three survey domains—planned care for chronic conditions and preventive care, coordination of care, and patient and caregiver engagement—were significantly associated with a reduction in hospitalization rates. However, it is difficult to quantify the *independent* contribution of improvement in these domains of care delivery to reductions in hospitalization rates, because practices making improvements in one domain were also making improvements in other domains.

These early improvements in outcomes are promising. Practices' considerable progress in implementing the CPC change package in PY2014 is expected to take some time to take hold, and challenging work remains for them to tackle in the second half of CPC. We will continue to examine practices' progress transforming care delivery and its effects on outcomes to determine the effects of changes made in the second half of the initiative.

Detailed overview of findings

The rest of this executive summary provides a more detailed overview of findings from the second annual report.

ES.1. CPC participation remained stable in 2014

Payer participation. CMS and 37 other payers (which include private health plans in all CPC regions and state Medicaid agencies in five of CPC's seven regions) are working together to make a substantial investment of public and private resources to redesign primary care in CPC's seven regions.[2,3] Payer participation has remained steady, with no payers leaving in PY2014, and only a few small payers leaving CPC or merging with another participating payer in CPC's first program year, defined as fall 2012 through December 2013 (Table ES.1). In general, payers are engaged in and committed to the initiative, with most reporting sustained or increased commitment to primary care redesign and to alternative payment more generally, when we interviewed them in summer and early fall 2014.

[2] Payers participating in more than one region are counted separately for each region in which they participate. There are 29 distinct payers participating in CPC in addition to Medicare. Hudson Health Plan and MVP from the New York region have participated in CPC since its inception. However, Hudson Health Plan was acquired by MVP in September 2013, so we now count these as one payer.

[3] New Jersey and New York are the two regions whose Medicaid agencies do not participate. In addition, the Oklahoma Health Care Authority is participating in the Oklahoma region and is counted as one of the Medicaid participating payers, although it is not providing care management fees to participating practices.

Table ES.1. Number of CPC participants at the start of the initiative and the end of program years 1 and 2

CPC participant	Start of CPC initiative (Fall 2012)	End of CPC program year 1 (December 2013)	End of CPC program year 2 (December 2014)
Regions	7	7	7
Payers[a]	31	29	29
Practices	502	492	479
Clinicians[b]	2,172	2,158	2,200
Attributed Medicare FFS patients[c]	313,950	316,334	333,617
Attributed patients of other participating payers[d]	Not known	887,846	807,734
Other, nonattributed patients served by practices[d]	Not known	1,330,326	1,655,617
Total patients served by practices (attributed plus nonattributed)	Not known	2,534,506	2,796,968

[a] Reflects participating payers other than Medicare FFS. Payers participating in more than one market are counted once. When counted separately for each region, there were 39 participating payers at the start of CPC; 37 payers are currently participating.

[b] Clinicians include physicians, nurse practitioners, and physician assistants with national provider identification numbers.

[c] Source: ARC provides lists of attributed Medicare beneficiaries each quarter; these lists were de-duplicated to determine the number of patients ever attributed. This number differs somewhat from those that practices report.

[d] Source: Practices reported the number of attributed and nonattributed patients (calculated for the program year) in their PY2013 and PY2014 budget and Milestone submissions. Practices also submitted the total number of active patients in their practice as a point in time, which was used to calculate other, nonattributed patients served (by subtracting total attributed patients from total active patients). Mathematica and Bland & Associates analyzed the budget data for PY2013 and PY2014, respectively. Reported numbers and differences between years should be interpreted with caution, given the potential for slight differences in the methods underlying the calculation of these statistics, as well as challenges that some practices have in reporting the number of unique patients they see.

FFS = fee-for-service.

Participating payers have included most of their lines of business in CPC but vary in their inclusion of self-insured clients. Self-insured participation, however, has increased over time as payers work to engage self-insured clients in CPC. As of December 2014, 10 payers with self-insured clients included all or most of their self-insured lives in CPC, 8 payers included some, and 8 included none.

Practice participation. In summer 2012, 502 practices were selected to participate in CPC in fall 2012. Five practices withdrew from CPC soon after the initiative began after they assessed the terms and conditions of CPC participation. For the impact evaluation, we took the 497 practices participating as of March 2013. (Given our intent-to-treat approach to examining CPC's impacts, these 497 CPC practices and their attributed patients will remain in our impact analyses throughout the evaluation, whether or not they withdraw or are terminated from the initiative.) To help evaluate the impact of CPC, in March 2013, we selected practices that were comparable to CPC practices to serve as a comparison group for the evaluation.

Given the amount of work required of practices for CPC, their participation has remained remarkably stable in the initiative's first two years. A total of 25 practices—fewer than 5 percent of all practices that joined CPC in fall 2012—withdrew or were terminated from CPC during its first two program years. Of these, 5 practices left the program shortly after it began upon

learning the terms and conditions of participation; 6 left to join accountable care organizations (ACOs) participating in the Medicare Shared Savings Program; and 10 left due to challenges with CPC requirements, either voluntarily (6) or because CMS terminated them (4). In addition, several practices closed, merged, or split. As of December 31, 2014 (the end of the second program year), after withdrawals, terminations, and practice mergers and splits, 479 practices were still participating.

Participating patients. Although practices receive care management fees only for attributed patients of participating payers, CPC requires all changes made as part of CPC, including care management services, to be delivered to all patients in a practice. During CPC's first two program years, the number of both total and attributed patients was substantial. The total number of patients at the end of 2014 was estimated at almost 2.8 million across all participating practices, and 334,000 of these patients were attributed Medicare FFS patients.

ES.2. CPC delivers financial support, data feedback, and learning supports to practices

To help participating practices change care delivery and accomplish CPC's goals, the initiative provides financial support, data feedback, and learning activities to participating practices. In its second year, CPC's participating payers continued to provide substantial enhanced payment, in the form of nonvisit-based care management fees paid in addition to traditional FFS payments, for those patients attributed to CPC practices.[4] Practices selected for intensive study (the "deep-dive" practices)[5] indicated these payments are key to their transformation efforts. Some practices considered CPC's data feedback useful, but many found it challenging to understand how to use it in their improvement efforts. Many practices also considered learning activities important; in general, opportunities for networking between practices through in-person learning sessions, participation in electronic health record (EHR) affinity groups, and individualized practice coaching were viewed as the most helpful aspects. Moreover, practices appreciated the increased focus in PY2014 on specific practical issues, such as workflows for a given Milestone.

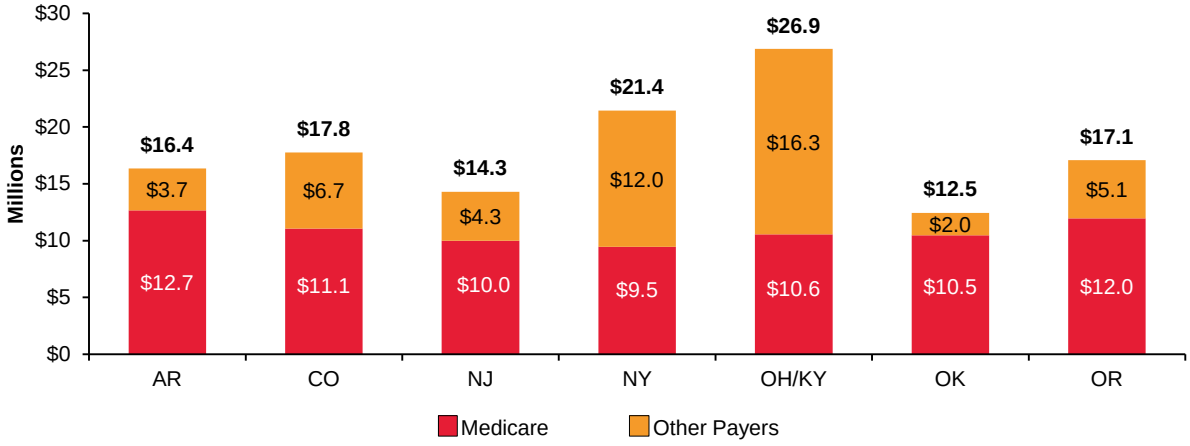
Financial supports. For each Medicare beneficiary attributed to a CPC practice, CMS paid a monthly care management fee, based on the risk quartile of the patient's hierarchical condition category (HCC) score (a measure of risk for subsequent expenditures) when a beneficiary was first attributed to a CPC practice. In CPC's first two years, there were four fee levels, ranging from $8 to $40 PBPM, with an average of $20 PBPM. (These fee levels—$8, $11, $21, and $40 in CPC's first two years—were the same across all regions.) In the latter two years of the intervention, Medicare's average PBPM payment declined to $15. Other payers (including Medicare Advantage plans, Medicaid managed care, commercial insurers, and CMS on behalf of Medicaid FFS agencies in some regions) paid lower per member per month (PMPM) amounts on average, in part reflecting the lower average acuity level for their patients.

[4] Medicare FFS beneficiaries were attributed on a quarterly basis to CPC practices that delivered the plurality of their primary care visits during a two-year lookback period. Other payers used their own attribution methodologies.

[5] We conducted in-depth interviews with clinicians and staff at 21 deep-dive practices (3 per CPC region) during site visits in 2013 and by telephone in 2014. We will continue to study these same 21 practices throughout the initiative.

In PY2014, CPC practices received sizable enhanced payments from CMS and other participating payers, in addition to their usual revenues. Examining CPC payments on an annual basis, total CPC care management fees for the median practice were $203,949 ($64,142 per clinician), which is equivalent to 14 percent of 2014 total practice revenue for the median practice.[6] This is roughly comparable to the funding in CPC's first year.[7] On average, payments were $117 annually per attributed patient, or $48 per patient in the practice.[8] Across the seven regions, CPC enhanced payments from all payers for PY2014 totaled $126.2 million, ranging from $12.5 million in Oklahoma to $26.9 million in Ohio/Kentucky (Figure ES.2).[9]

Figure ES.2. Total CPC payments from Medicare and other payers, by region, in PY2014



Source: Bland & Associates analysis of PY2014 budget data.

Medicare FFS and most other payers maintained the same PMPM levels for their care management fees in PY2013 and PY2014. Medicare FFS accounted for about 30 percent of all attributed patients in CPC but 60 percent of enhanced payments (Figure ES.3). Recognizing that CPC required upfront investment, CMS and at least one-third of other payers offered higher care management payments initially, and planned to reduce these payments to practices starting in January 2015. CMS and most other participating payers also will provide practices the opportunity to share in annual savings accrued during each of the last three years of the initiative.

[6] Median CPC payments per practice in PY2014 ranged from $148,138 in New Jersey to $323,526 in Ohio/Kentucky; median payments per clinician ranged from about $43,642 in Oregon to $89,085 in Ohio/Kentucky.

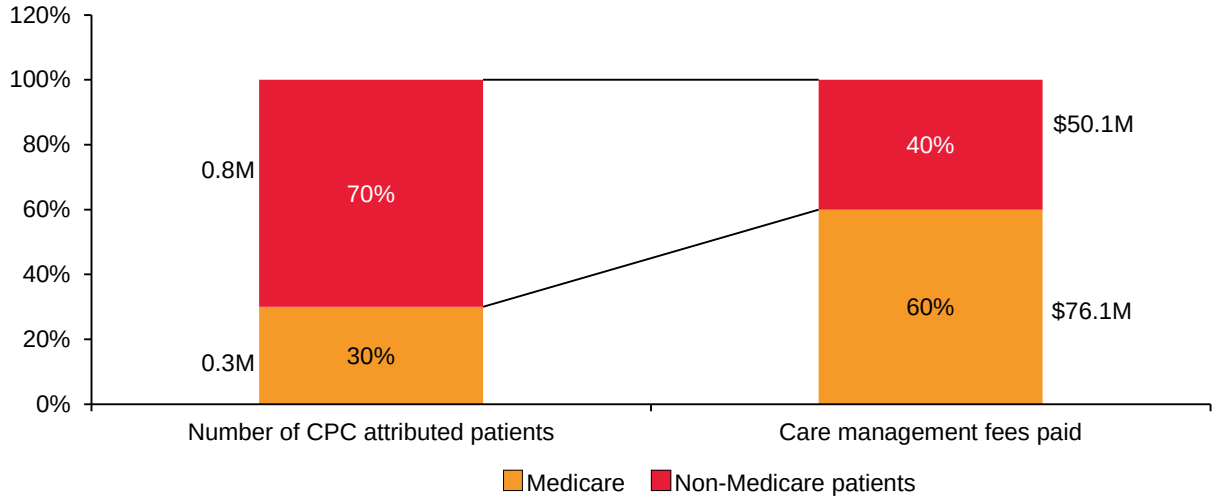
[7] PY2013 funding (which includes several months of payments in late 2012) was approximately $70,000 per clinician. Translated to a monthly payment, PY2014 payments were slightly higher than PY2013 payments (approximately $5,300 versus $5,000).

[8] The payment statistics presented here are based on an analysis of the PY2014 budget data by Bland & Associates. The methods used to calculate these statistics differ slightly from those used by Mathematica to calculate the PY2013 statistics.

[9] These differences in funding amounts reflect variation by region in the level of penetration among participating payers, PMPM payment amounts, and differences in patient attribution approaches.

Specifically, most payers will share with practices a portion of any savings accrued during 2014, 2015, and 2016 approximately 6 to 12 months after the end of each calendar year.

Figure ES.3. Medicare FFS enhanced payments for CPC account for a large share of total CPC payments to practices in PY2014



Source: Bland & Associates analysis of PY2014 budget data as reported by participating practices. Note, however, that Medicare care management fees shown above reflect CMS-reported payment amounts rather than practice-reported CMS payment amounts. The variance between CMS-reported and practice-reported payments ranged widely with the median practice slightly underreporting payments received from CMS.

FFS = fee-for-service; M = million.

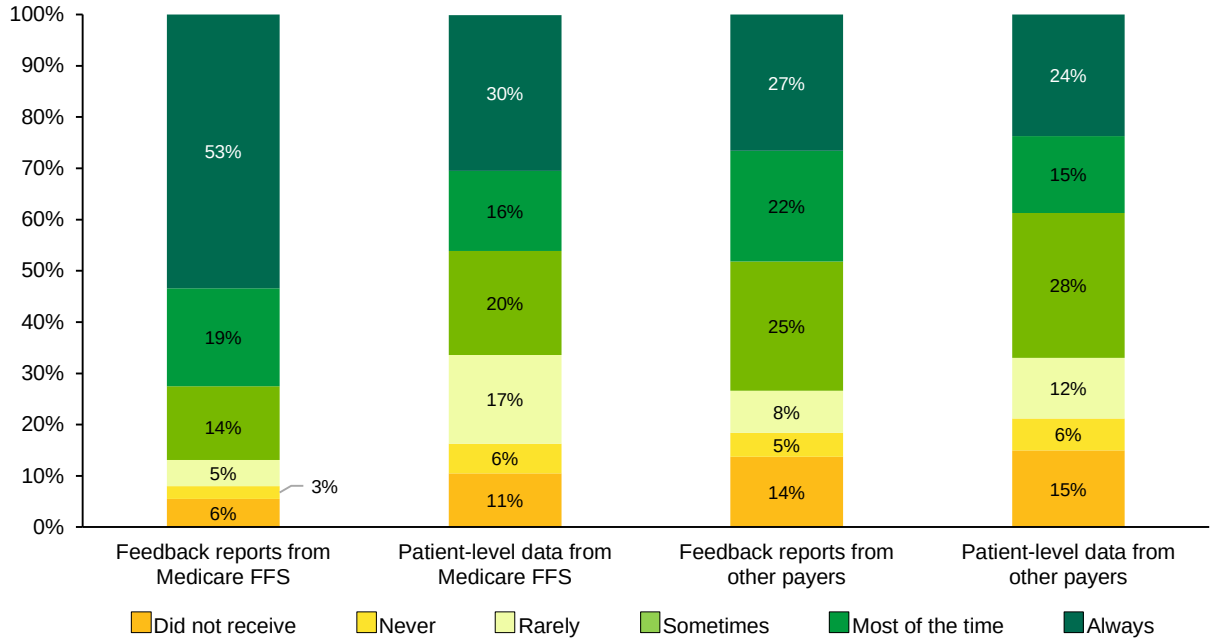
Payers' approaches to calculating shared savings vary on a range of factors, including the level at which savings are calculated (that is, all CPC practices in a region versus subregional combinations of practices), the method used to calculate expenditures, and the quality measures used to determine whether practices are eligible to share in savings.

Data feedback. Practices received practice-level feedback reports from Medicare FFS and about two-thirds of other participating payers, and they received patient-level data files from Medicare FFS and more than half of other payers. In the spring 2014 practice survey, nearly three-quarters (73 percent) of practices reported reviewing Medicare FFS practice-level reports all or most of the time, versus 48 percent of practices for other payers' practice-level reports. A smaller proportion of practices in this survey reported reviewing patient-level data files: 46 percent of practices reviewed Medicare FFS patient-level data files, and 39 percent reviewed other payers' patient-level data files, all or most of the time.

Although practices reported seeing value in using data feedback to guide care delivery, the practices selected for intensive study (the "deep-dive" practices) noted that feedback reports from Medicare claims data arrive several months after their patients have experienced events such as hospitalizations and emergency department (ED) visits. Therefore, although Medicare data are useful in following longer-term trends, practices cannot use them to guide short-term follow-up of patients. Deep-dive practices also noted that the data in the Medicare feedback reports were not always actionable because they did not include such information as the cost of

specialists. Some smaller practices also lacked the staff and resources to fully analyze these reports. In response, CMS and regional learning faculty (or RLF, the organizations under contract to provide learning activities and assistance to practices in each of CPC's seven regions), offered practices new learning activities to help them understand and use data feedback. In addition, CMS, along with some other payers, are considering ways to improve data feedback reports. For example, more information on specialists used by the practice's patients may be included in future Medicare reports.

Figure ES.4. How often practices report reviewing feedback reports and patient-level data files from CMS and other participating payers



Source: Mathematica analysis of the CPC practice survey, administered between April and July 2014

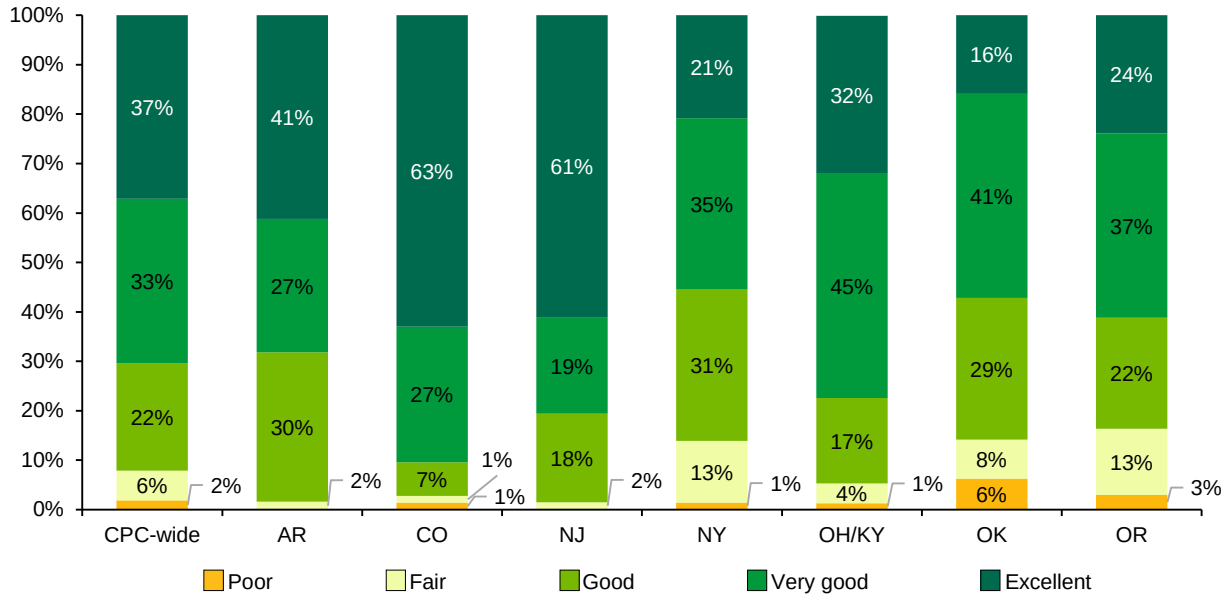
Note: A response of "did not receive/unaware of" could mean either that the resource was not available or that the respondent was unaware of the resource. While other payers varied in whether they provided feedback reports and patient-level data, the Medicare feedback reports and data were available during this time; therefore, a "did not receive/unaware of" response for Medicare feedback reports and data indicate a lack of awareness.

Learning activities. CMS and its contractors continued to educate CPC practices and provide opportunities for peer-to-peer learning through a wide range of learning supports in PY2014, including regional webinars and all-day meetings, cross-regional learning activities, individualized practice coaching, and a CPC web-based knowledge management and collaboration tool (called the "collaboration site"). Some practices also received supplemental learning support from payers or other stakeholders in their region through other programs.

RLF indicated that individualized practice coaching most commonly focused on risk stratification and care management, shared decision making, and using data to guide improvement. In the spring 2014 practice survey, the percentage of practices reporting at least monthly interactions with RLF ranged from 63 percent in Oregon to more than 90 percent in Arkansas and Colorado.

In PY2014, nearly all practices regularly participated in CPC learning activities, and most reported being satisfied with the level of support they received (Figures ES.5 and ES.6). Deep-dive practices most valued individualized practice coaching from RLF and opportunities to network with other practices and learn from them.

Figure ES.5. Percentage of practices rating their RLF as excellent, very good, good, fair, or poor in meeting their CPC-related needs

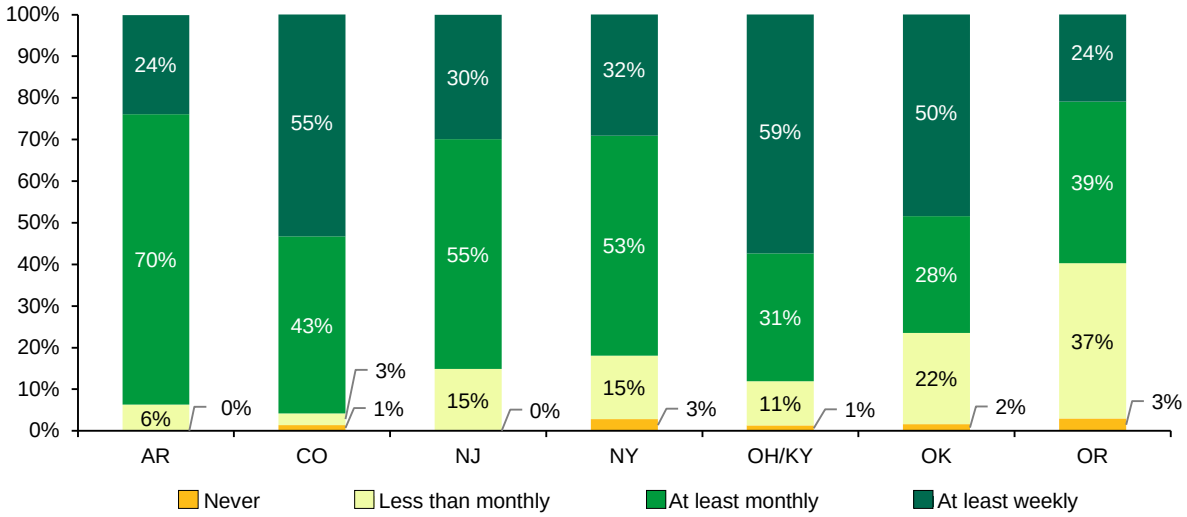


Source: Mathematica analysis of the CPC practice survey administered between April and July 2014.

Note: Some columns do not add up to 100 percent due to rounding. Practices in New Jersey were asked to rate the New Jersey Academy of Family Physicians, because it provides support to all but two New Jersey practices. (These two practices are supported by TransforMED.)

RLF = regional learning faculty.

Figure ES.6. Frequency of reported communication with RLF in previous six months, by region



Source: Mathematica analysis of the CPC practice survey, administered between April and July 2014.

Note: Some columns do not add up to 100 percent due to rounding.

RLF = regional learning faculty.

ES.3. CPC collaborations of participating payers, practices, and other stakeholders remain key in 2014

CPC brought together a large group of payers and practices to transform primary care. Collaboration within and across these groups is critical to successful implementation of the initiative.

To this end, CMS and other participating payers in each region have met frequently since the start of CPC. Payers discuss opportunities for aligning and coordinating their supports for practices, common barriers to completing Milestones, and, with increasing frequency, strategies for sustaining primary care transformation after CPC ends. A central focus of payer collaboration has involved aligning data feedback to participating practices; in fact, participating payers in all regions but New Jersey took steps to develop a common approach to feedback. However, some challenges—including cost, competitive dynamics, and corporate priorities—have delayed or limited collaborative efforts in a few regions. Most CPC payers highly value the opportunity to collaborate with other payers for CPC and continue to be committed to primary care transformation. Many payers are increasing their emphasis on CPC and other similar efforts that focus on primary care redesign and alternative payment approaches. Moreover, some payers are applying lessons learned from CPC to help shape other initiatives in CPC regions, most notably the design and implementation of State Innovation Models (SIM) awards. As a result, non-CPC primary care practices in some regions are encouraged to pursue CPC Milestones or aims in line with CPC goals and receive payments, learning support, and data feedback similar to those of CPC practices. Although much less common, a few payers with small numbers of attributed patients in CPC have shown lower levels of engagement throughout the initiative.

In addition to payers, CMS has engaged practices and other CPC stakeholders in shaping the initiative. In each region, CMS hosts meetings facilitated by multistakeholder faculty that engage payers and practices and, in some cases, consumers, employers, and community groups. Although some payers value such meetings highly, many reported that the meetings occurred more frequently than necessary or that those focused specifically on CPC were less useful than meetings focused more broadly on reform efforts in the state.

Payers continue to view CMS as a critical partner in efforts to transform primary care, recognizing its role in encouraging practice participation in transformation efforts and bringing additional financial and technical support to each region. Payers also indicated that some aspects of working with a federal agency remain challenging (such as the delay in CMS's participation in data aggregation and the time needed for federal clearance before CPC's impact results are released), but many acknowledged the legal and other constraints under which CMS works. Payers suggested that, in the remaining years of CPC, CMS continue to improve communication and transparency with other payers and involve payers more actively in CPC decision making.

ES.4. CPC is changing how participating practices deliver care

There is clear evidence from multiple data sources that, in PY2014, practices undertook substantial and difficult transformation, and began to improve how they deliver care. Practices spent much of the initiative's first year trying to understand CPC and set up staffing, care processes, and workflows. In its second year, however, they were able to make meaningful progress in CPC Milestone activities. Although progress has been notable, substantial room still exists for continued improvement in implementing the CPC change package in the remaining two years of CPC.

Practices' self-reported approaches to aspects of primary care delivery overall, and to risk-stratified care management and access in particular, suggest considerable improvement since the start of CPC. Specifically:

- CPC practices' self-reported information[10] on their approaches to delivering primary care indicates improvement in each region during the first two years of CPC.
- Among CPC's five key functional areas, practices made the largest improvements in the delivery of risk-stratified care management, according to several data sources.
    - Practices' care management activities have evolved from an initial focus on assigning risk scores to patients to using the risk scores to allocate care management resources. Before CPC, most practices were not systematically risk stratifying their patients. Now, nearly all are performing risk stratification and have hired or repurposed nurses or other staff to help with care management for their high-risk patients, particularly education on and monitoring of chronic condition management and follow-up after hospital or ED discharge.

[10] Self-reported data allow the evaluation to rapidly collect information on how practices are delivering care. Although no financial incentives are associated with the survey responses, practices may interpret the response categories or their care delivery approaches differently. In addition, some practices may rate their own processes more favorably than an objective, independent reviewer would. Conversely, the CPC initiative also may raise the standards of some practices, leading to lower ratings of the same approaches over time for some practices.

  - Care managers reported working more closely since the start of CPC with clinicians to help manage and monitor patients at highest risk.
  - Because a care manager was a new team role for many practices, some have struggled with learning to use them effectively.

- According to practices' survey responses, the CPC functional area with the second-largest improvement is access to care. Deep-dive practices noted they have focused on patient portal uptake, improving wait times for patients for appointments, improving telephone access to the practice for patients, and providing after-hours access to clinicians through email, by telephone, or in person.
- From the deep-dive practices' perspective, risk-stratified care management (Milestone 2) and timely follow-up after hospital discharge and ED visits (Milestone 6) are the areas most clinically relevant to improving patient care.

In making these changes to care delivery, deep-dive practices that use team-based approaches to workflows for CPC Milestones have found implementation more manageable. Clear role delegation and open communication supported teamwork. Spreading the work across staff in the practice decreases the burden on any one staff member and makes staff feel that they are working together toward improvement goals. It is challenging to get all clinicians and staff in a CPC practice to buy into the workflow and EHR documentation changes needed to implement the Milestones. Practices in which only a lead clinician or a few clinicians and staff members are implementing the work of CPC reported more difficulty meeting the Milestones.

Practices continue to face implementation challenges midway through CPC. Not surprisingly for an initiative that requires significant changes in care delivery on several fronts simultaneously, practices face ongoing challenges:

- In general, most deep-dive practices feel that meeting the annual targets specified for all nine Milestones, plus the associated reporting requirements, is overwhelming; they would prefer to focus on fewer Milestones.
- Although CPC funding is substantial, it is challenging for some small practices to afford care managers with CPC funds alone. Several deep-dive practices also seem to need additional funding beyond what CPC provides to hire or consult with health information technology (HIT) experts to support documentation processes and reporting.
- Although system-affiliated practices tend to have more resources (including, in some cases, access to behavioral health providers, pharmacists, and HIT support), such practices often have less autonomy in making decisions, altering workflows, and hiring and supervising nurse care managers. In a few of the deep-dive practices, lower autonomy resulted in less practice buy-in for some Milestones, such as shared decision making.
- In general, although nearly all CPC practices were able to report electronic clinical quality measures (eCQMs) in PY2014, limitations in EHR functionalities result in inadequate support for practices to *efficiently* report eCQMs (Milestone 5) or to create and modify dynamic care plans that can be adapted as patient needs change over time (Milestone 2). These EHR limitations pose challenges to the work of care managers, clinicians, and other staff who need to enter, track, and retrieve data for these CPC Milestones.

- Reflecting the current national landscape, electronic health information exchange between primary care providers, specialists, hospitals, and other providers to support care coordination and care management remains inadequate, largely due to lack of interoperability. This is true for independent practices that are often not on the same EHR system as other providers in their medical neighborhood, as well as for system-owned practices when they need to coordinate care with providers outside their system.
- Despite practices' attempts to implement the use of patient decision aids for shared decision making, clinicians in a few of the 21 deep-dive practices, as in the previous rounds of interviews, still did not seem to understand that the concept of shared decision making in CPC applies to engaging patients about treatment options for preference-sensitive conditions[11] rather than to more general patient education and engagement. Even among those practices that use shared decision making, many practice staff are concerned about the time required to engage patients in this activity.

ES.5. CPC improved patient experience slightly, despite potentially disruptive changes in practices from transforming care delivery

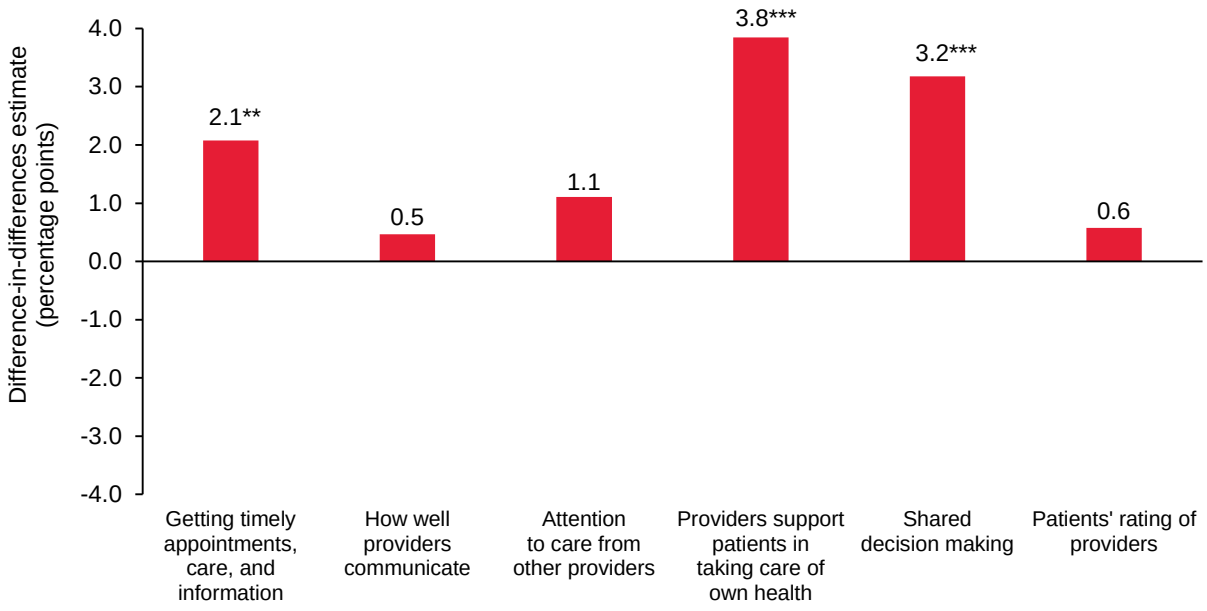
CPC is expected to ultimately improve patient experience through participating practices' work on annual Milestones, especially Milestones 3, 4, and 7. However, there is also some risk that changes from transforming care delivery could worsen patient experience, particularly at the start of CPC. We analyzed patient experience of more than 25,000 Medicare FFS beneficiaries in 496 CPC practices and nearly 9,000 beneficiaries in 792 comparison practices for the periods June through October 2013 (8 to 12 months after CPC began) and July through October 2014 (21 to 24 months after CPC began), using the Consumer Assessment of Healthcare Providers and Systems Clinician and Group Patient-Centered Medical Home Survey (CG-CAHPS PCMH).[12]

Between its first and second year, CPC appears to have had small, statistically significant, favorable effects on the percentage of Medicare FFS respondents choosing the most favorable ratings for three of six CAHPS composite measures in CPC versus comparison practices: (1) getting timely appointments, care, and information (2.1 percentage points, $p = 0.046$); (2) providers support patients in taking care of own health (3.8 percentage points, $p = 0.000$); and (3) shared decision making (3.2 percentage points, $p = 0.006$) (Figure ES.7). These were driven by small (less than 2 percentage points) year-to-year improvements for CPC practices and small declines (less than 2 percentage points) for comparison practices.

[11] Preference-sensitive conditions are conditions for which two or more medically acceptable treatment options exist, current evidence does not favor one option over another, and thus the choice should depend on patient preferences. For CPC, CMMI has identified a list of such conditions for practices in the CPC Implementation and Milestone Reporting Summary Guide.

[12] The sample includes 496 of the 497 practices that were participating in CPC at the time of the first survey and their matched sets of comparison practices. The sample excludes two CPC practices that closed in summer/fall 2013 and their matched comparison practices, and one CPC practice that split into two CPC practices in 2014.

Figure ES.7. Estimated differences in the year-to-year improvement in six patient experience domains from 2013 to 2014 for CPC practices compared to comparison practices, sample of Medicare FFS patients CPC-wide



Sources: Mathematica analysis of a survey of Medicare FFS beneficiaries. The first round was fielded June to October 2013 (8 to 12 months after CPC began) and the second round was fielded July to October 2014 (21 to 24 months after CPC began).

*/**/*** Statistically significant at the 0.10/0.05/0.01 level

FFS = fee-for-service.

Looking beyond the composite measures to specific questions, patients from CPC practices reported ratings of care over time comparable to those reported by patients from comparison practices for individual questions in the composite measures and for other questions not in the composites, with slightly more favorable differences—generally of small magnitude—over time for CPC practices than expected by chance.

These results suggest the changes in care delivery during the first two years of CPC have made minor improvements in patient experience so far, and did not negatively affect it.

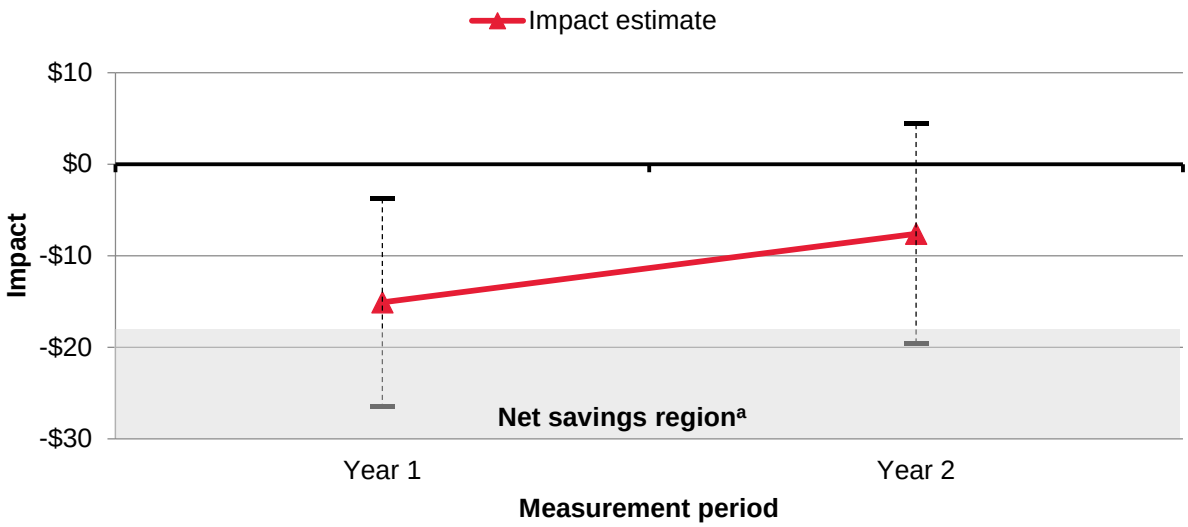
CPC and comparison practices still have room for improving patient experience in certain areas. Despite CPC practices showing small improvements on average over the past year, roughly half of CPC patients continued to report difficulty getting timely appointments, care, and information and having providers' support in taking care of their own health, among other areas.

ES.6. CPC reduced Medicare FFS expenditures—mostly through reductions in hospitalizations—but did not cover CPC payments

Expenditures and service use. Although we did not expect to find effects of CPC in the first two years, CPC appears to have reduced total monthly Medicare FFS expenditures without CPC care management fees by a statistically significant $11 per person per month (impact estimate of $11 savings, with a 90 percent confidence interval ranging from a savings of $1 to $21), or 1 percent, from October 2012 through September 2014 based on results for all seven regions combined.[13] This amounts to an aggregate savings of $91.6 million, based on the total number of eligible beneficiary months among beneficiaries attributed to CPC practices in the first two years. The trend over time differs somewhat from what had been expected (see Figure ES.8). We expected to see little or no effects during CPC's first year, followed by small but meaningful effects in the second year, as the program matured; however, we see slightly (but not significantly) larger estimated effects in CPC's first 12 months than in its second 12 months; neither estimate was large enough to cover CPC care management fees and generate net savings (denoted by the shaded gray area of the figure). Given that the annual estimates for the first and second years do not differ significantly from each other, however, our overall conclusion relies less on the time path of the point estimates by year, and more on the pooled estimate of savings in Medicare expenditures without fees of $11 per beneficiary per month across the two years. We tested many alternative specifications of the model, outcome variable, and sample, and we also conducted a Bayesian analysis (allowing the estimated effects in a given region to depend in part on the CPC-wide effects); in general, we found similar results, leading us to have confidence that the findings are robust to variations in analytic methods.

[13] We conduct this test at the less stringent 0.10 significance level because we are just as concerned about Type II errors (failing to reject the null hypothesis of no effect when it is false) as Type I errors (erroneously rejecting the null hypothesis when it is true). We rely on results for related outcome measures, like service use, to minimize the likelihood of drawing erroneous inferences about whether estimated effects are real or due to chance.

Figure ES.8. Estimated CPC impact on Medicare Part A and Part B expenditures per beneficiary per month, excluding CPC care management fees, all beneficiaries, CPC-wide



Source: Mathematica analysis of Medicare FFS claims.

Notes: The estimated impact, denoted by a separate triangle for each CPC quarter in the figure, is equal to the difference in mean outcomes between patients in CPC and comparison group practices in the first two years after CPC began minus the average difference between the two groups over the pre-CPC period. The impacts are regression adjusted to control for pre-CPC differences in patient and practice characteristics between the CPC and comparison groups. The 90 percent confidence interval is shown by the dashed vertical line through each impact estimate.

[a] Impact estimates that fall in the shaded net savings region imply that there are savings after including the CPC care management fees—that is, that estimated savings in expenditures without CPC care management fees exceed the CPC care management fees.

FFS = fee-for-service.

For high-risk patients, during the first two years, the cumulative decline in average monthly Medicare expenditures without care management fees relative to the comparison group were larger in magnitude and about the same percentage impact as among all patients, although not at a statistically significant level, given the much smaller sample size for high-risk beneficiaries: a reduction of $18, or 1 percent. Effects did not vary systematically with any practice characteristics.

The reductions in Medicare expenditures without fees are driven by reductions in both inpatient and skilled nursing facility expenditures. Also, reductions in Medicare expenditures were driven by favorable CPC-comparison differences in four regions—New Jersey, New York, Oklahoma, and Oregon—although the estimated effects were statistically significant only in New Jersey and Oklahoma.

The reductions in Medicare FFS expenditures without fees were not enough to cover CPC care management fees overall or for high-risk patients. For Medicare patients overall, the $11 reduction in Medicare expenditures offset over half of CPC's care management fees, which

averaged $18 per attributed beneficiary per month. (This is less than the average of $20 CMS paid for attributed beneficiaries because we follow beneficiaries even if the practice no longer receives fees for them). A one-sided equivalence test of the hypothesis that savings were less than $18 PBPM could not be rejected ($p = 0.87$) and thus does not support the conclusion that reductions in expenditures without fees exceeded the $18 PBPM payments. The change in average expenditures including the care management fees was $7 higher for CPC than comparison beneficiaries ($p = 0.27$, 90 percent CI -$3, $17). Our Bayesian model estimates suggest that there was a 98.6 percent likelihood that CPC did reduce Medicare FFS expenditures, but with only a 4 percent likelihood that it reduced them by more than the $18 PBPM required to cover the CPC care management fee. Similarly, the $18 reduction for high-risk patients was not enough to offset the $29 average care management fee paid for attributed high-risk beneficiaries per month in our analysis sample. Therefore, CPC did not generate savings net of care management fees.

Quality of care. Through the first two years, CPC appears to have had minimal effects on the annual claims-based quality-of-care process and outcome measures we examined for attributed Medicare FFS beneficiaries. The only statistically significant effects for the two summary measures of process-of-care for patients with diabetes were an 11 percent improvement in year 2 in one summary measure (not receiving any of four recommended tests we tracked for diabetes) among all beneficiaries with diabetes ($p = 0.03$), and roughly 10 percent improvements in the other summary measure (receiving all four recommended tests for diabetes) among high-risk beneficiaries with diabetes ($p < 0.01$ in year 1 and $p = 0.01$ in year 2). There were no significant effects on any of the individual quality-of-care process measures for diabetes or ischemic vascular disease among all beneficiaries with the conditions, although among high-risk beneficiaries with diabetes, there were statistically significant improvements of 4 percent in two of the four individual diabetes measures—eye exam in year 1, and urine protein testing in both years 1 and 2 ($p < 0.05$ for each estimate). The claims-based process-of-care quality measures included in this report are limited in scope compared to the EHR-based clinical quality measures that CPC practices are required to focus and report on, and the claims-based measures do not adequately capture all domains of care.

ES.7. Improvements in primary care delivery, as measured by overall PCMH-A score, are strongly related to reductions in hospitalizations

In addition to knowing the effects of CPC overall, it is important to identify whether and how strongly practices' transformation of the delivery and organization of primary care was associated with practices' success in reducing costs and cost drivers. We found that CPC practices with larger improvements in self-reported ratings of how they delivered key aspects of primary care between baseline and the second year of CPC experienced substantially larger reductions in hospitalization rates than practices with smaller improvements in primary care delivery. Each 1-point improvement in the 12-point index of practice transformation was associated with an additional decline of 1.15 percentage points in the hospitalization rate. Thus, practices that improved by the average amount of 2.3 points reduced their hospitalization rates by 5.3 percent, compared to the 2.6 percent reductions experienced by practices making no improvements in their score. Practices in the top quartile of improvement in PCMH-A score, with an average increase of 4.5 points, had average reductions of 7.8 percent in their hospitalization rates.

We also examined how strongly the percentage reduction in hospitalization rates was associated with improvements in each of the seven domains of primary care into which the 37 items were clustered, while recognizing that these domains are similar to, but do not completely align with, CPC Milestone definitions. When examined individually, improvements in three domains—planned care for chronic conditions and preventive care, coordination of care, and patient and caregiver engagement—are significantly associated with a reduction in hospitalization rates. These domain-level findings are confirmed by similar findings for individual items comprising the domains; improvements in 15 of the 37 individual items on the annual survey of practices are associated with reductions in hospitalization rates.

CPC practices' improvements in care delivery, as measured by the overall PCMH-A score and in some domain scores, are strongly related to reduction in hospitalization rates. However, it is difficult to quantify the *independent* contribution of improvement in each domain of care delivery to reductions in hospitalization rates, because practices making improvements in one domain are also making improvements in other domains. Nonetheless, this initial investigation suggests some promising relationships between transformation and hospitalizations, a principal driver of Medicare expenditures. Future analyses will investigate the relationship of practice changes to other outcomes of interest, such as emergency room visits, and for later periods. These analyses may reveal different associations between practice-level changes in how they deliver care and outcomes, as practices continue to transform and the effect of changes already made begin to emerge.

ES.8. The evaluation will continue to track the implementation and impacts of CPC

Over the next two years, we will continue to monitor the implementation and impacts of CPC to see whether the effects persist or grow, as expected, as the practices gain experience and meet increasingly more ambitious annual Milestones for improvement.

- The *implementation analysis* will continue to focus on understanding the payment, data feedback, and learning supports the payers provide to practices, and how participating practices implement the Milestones and change primary care delivery.
- The *impact analysis* will continue to track effects on patient, clinician, and staff experience and claims-based measures of expenditures, service use, and quality of care. We will look for whether effects persist or grow, both over time and across related outcomes. We also will assess whether practices that reduced their patients' Medicare expenditures also improved quality and patient experience. We will continue to test the sensitivity of our findings to the sample, comparison group, and model specifications, including using Bayesian estimation methods, to ensure our main findings are robust.
- Finally, a formal *synthesis* will continue to look for links between implementation findings and impacts on health care expenditures, use, and quality, as well as patient and clinician experience. Throughout, we will focus on identifying the nature and extent of practice changes and the efforts that seem to produce the greatest improvements in outcomes. We also will identify factors that appear to create barriers to practice improvements, as well as effective efforts to remove such barriers.

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1. INTRODUCTION

1.1. Overview of the Comprehensive Primary Care initiative

The Center for Medicare & Medicaid Innovation (CMMI) of the Centers for Medicare & Medicaid Services (CMS) launched the Comprehensive Primary Care (CPC) initiative in October 2012. This unique collaboration between CMS and other private and public payers—including commercial insurers and Medicaid managed care plans—aims to improve primary care delivery and achieve better care, smarter spending, and healthier people. CPC also aims to enhance provider experience.

CMMI views CPC as a test of a new model of care delivery for nearly 500 primary care practices across seven regions. CPC focuses on helping practices implement five key functions in their delivery of care: (1) access and continuity, (2) planned chronic and preventive care, (3) risk-stratified care management, (4) patient and caregiver engagement, and (5) coordination of care across the medical neighborhood. For each year of the CPC initiative, CMS specifies a series of Milestones designed to help move practices along the path of implementing these functions, which build on their progress in the prior year. CMS assesses how the practices are delivering care and requires that practices meet the Milestone requirements to remain in the program.[14] To help participating practices change care delivery and accomplish the goals of CPC, the initiative provides them with the following supports:

- **Financial support** from multiple payers who collectively represent a substantial market share in each region. The monthly care management payment for Medicare fee-for-service (FFS) beneficiaries averaged $20 per patient per month during CPC's first two years (with payment ranging from $8 for low-risk patients to $40 for the highest-risk). Enhanced payment from other payers varies, but for most business lines (such as commercial), it is much lower than those provided for Medicare FFS beneficiaries, ranging from approximately $2 to $20. During the last three years of the program, most payers are offering participating practices the opportunity to receive a share of any net savings in health care costs beyond the amount required to cover the care management fees. Beginning in January 2015, Medicare reduced its average care management payments to $15 per patient per month. At least a third of other participating payers also planned to reduce their monthly payments to practices in 2015.
- **Data feedback** on each practice's progress in improving patient outcomes and controlling costs, provided quarterly by CMS for Medicare FFS beneficiaries and with varying frequency by many other participating payers. To increase reporting consistency across payers, payers in most regions are using aligned templates to report on a common set of measures, pursuing data aggregation (in which a third party combines data from all payers and provides that data feedback to practices in a single aggregated report), or both.
- **Learning activities,** consisting of group and individual support provided by experts and opportunities for peer-to-peer learning to help practices build quality improvement capacity and make changes to provide comprehensive primary care.

[14] For CMS's logic diagram for CPC, see http://innovation.cms.gov/Files/x/cpcidiagram.pdf.

1.2. Design of the CPC evaluation

Mathematica and its main subcontractor, Group Health Research Institute, are conducting a five-year, mixed-method, rapid-cycle evaluation that provides CMS, practices, and regions with regular, formative feedback (see Peikes et al. 2014 for more information on the research design). The evaluation combines impact and implementation studies to answer the following research questions:

1. Which regions, payers, practices, and patients participated in CPC? Why? What characteristics distinguish them?
2. What payment, data feedback, and learning activities did CMS and the other payers provide? How did practices use these supports?
3. How did practices change the way they delivered care, and what facilitated or impeded progress?
4. What were the effects on patient experience; quality, service use, and costs for attributed Medicare and Medicaid FFS beneficiaries; and clinician and staff experience?
5. How do the results differ across regions and across subgroups of practices and patients?
6. What factors account for the varying degrees of success in achieving the goals of the initiative, or the speed with which participants reached these goals?
7. What are the implications and findings for the replication and spread of CPC?

The evaluation relies on survey data (collected from practices, clinicians, staff, and patients); practice- and payer-level qualitative data (collected through site visits, interviews, and observations); and Medicare (and, possibly later, Medicaid) claims data.[15] To assess the initiative's effects on costs and quality for Medicare FFS patients and on stakeholder experience, we compare outcomes for CPC practices to those of a set of comparison practices that were similar to CPC practices before the start of CPC. To promote ongoing learning, we provide quarterly feedback to CMS, providers, participating payers, and other stakeholders. This feedback helps guide continuous improvement of practice operations and target programmatic, administrative, geographic, and organizational factors to maximize intervention effectiveness.

1.3. This report

This second annual report to CMMI contains recent findings from our study of CPC's implementation through December 2014 (or Program Year 2014, hereafter referred to as PY2014) and impacts for the first 24 months of CPC, through September 2014. The first annual report (Taylor et al. 2015) covered implementation through PY2013 (defined as October 2012 through December 2013) and impacts through September 2013.

[15] We also may examine effects on Medicaid FFS patients in some regions with enough Medicaid patients in both CPC and comparison practices. Because of data lags, however, we plan to analyze any Medicaid FFS data for the first time in 2016 and will include any analyses in our third annual report, provided there is a large enough sample of Medicaid FFS beneficiaries in some CPC regions to make this analysis worthwhile.

In Chapters 2 through 5, we discuss CPC's implementation in detail. We first describe changes in CPC participation and the supports provided to CPC practices during the initiative's second year. We also describe how payers and other stakeholders are working together for CPC and how practices are changing the way they deliver care. The first annual report provided additional details on CPC recruitment, baseline characteristics of CPC participants, and the first year of CPC implementation (Taylor et al. 2015).

In Chapters 6 and 7, we report estimates of the impact of CPC on key outcomes for attributed Medicare FFS beneficiaries. Chapter 6 reports effects on patient experience. Chapter 7 presents effects on a wide array of claims-based outcomes, including measures related to Medicare costs, utilization, quality of care, process of care, transitional care, and continuity of care during the first eight quarters of the initiative (October 2012 through September 2014).

Finally, in Chapter 8, we synthesize CPC's implementation and impact findings to date, to distill lessons learned for how to improve outcomes by improving care in five functional areas to deliver comprehensive primary care.

1.4. Future reports

Over the next two years, we will continue to monitor the implementation and impacts of CPC to see whether the effects persist or grow, as expected, as the practices gain experience and meet increasingly more ambitious annual Milestones for improvement.

- The *implementation analysis* will continue to focus on understanding the payment, data feedback, and learning supports the payers provide to practices, and how participating practices implement the Milestones and change primary care functioning.
- The *impact analysis* will continue to track effects on patient, clinician, and staff experience and claims-based measures of expenditures, service use, and quality of care. We will look for whether effects persist or grow, both over time and across related outcomes. We also will assess whether practices that reduced their patients' Medicare expenditures also improved quality and patient experience. We will continue to test the sensitivity of our findings to the sample, comparison group, and model specifications, including using Bayesian estimation methods, to ensure our main findings are robust.
- Finally, a formal *synthesis* will continue to look for links between implementation findings and impacts on health care expenditures, use, and quality, as well as patient and clinician experience. Throughout, we will focus on identifying the nature and extent of practice changes and the efforts that seem to produce the greatest improvements in outcomes. We also will identify factors that appear to create barriers to practice improvements, as well as effective efforts to remove such barriers.

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2. WHO PARTICIPATES IN CPC?

CPC is a bold undertaking that relies on a public-private partnership to support robust investment in primary care redesign, with the goals of better care, smarter spending, and healthier people. Selecting, organizing, and convening participants for an initiative of this scale and scope—and keeping them engaged and committed—requires tremendous operational resources and capacity. In the prior annual report, we described characteristics of the initiative's participating regions, payers, practices, and patients and indicated how participants were selected (Taylor et al. 2015). In this chapter, we present information on how participation has changed during the initiative's first two years.

2.1. Key takeaways on CPC participation

- CMS and 37 other payers are working together to make a substantial investment of public and private resources to redesign primary care in CPC's seven regions.[16] Payer participation has remained steady, with only a few small payers leaving CPC or merging with another participating payer in CPC's first program year and none leaving in PY2014 (Table 2.1). In general, payers are engaged in and committed to the initiative, with most reporting sustained or increased commitment to primary care redesign and alternative payment, when we interviewed them in summer and early fall 2014.
- Participating payers have included most of their lines of business in CPC, although payers vary in their inclusion of self-insured clients. Self-insured participation, however, has increased as payers work to engage self-insured clients in CPC. As of December 2014, 10 payers with self-insured clients included all or most of their self-insured lives in CPC, 8 payers included some, and 8 included none.
- In summer 2012, 502 practices were selected for CPC and joined when the initiative started in fall 2012. Five practices withdrew from CPC soon after the initiative started. For the impact evaluation, we took the 497 practices participating as of March 2013 and matched comparison practices to them. (Given our intent-to-treat approach to examining CPC's impacts, these 497 practices will remain in our impact analyses throughout the evaluation, whether or not they withdraw or are terminated from the initiative.)
- Given the amount of work required of practices for CPC, their participation has remained remarkably stable in the initiative's first two years, with less than 5 percent of practices withdrawing or being terminated from the initiative. As of December 31, 2014 (the end of the second program year), after withdrawals, terminations, and practice splits, 479 practices with 2,200 clinicians were still participating.
- During the first two program years, 25 practices withdrew or were terminated from CPC. Five practices voluntarily withdrew from CPC at the start of the initiative after reviewing program requirements. Sixteen practices voluntarily withdrew because the practice closed (4 practices), due to challenges meeting CPC requirements (6 practices), or to join an ACO participating in the Medicare Shared Services Program (6 practices). In addition, CMS terminated 4 practices that did not satisfy PY2013 program requirements. Several CPC

[16] Payers participating in more than one region are counted separately for each region in which they participate. There are 29 distinct payers participating in CPC in addition to Medicare.

practices also changed their composition: 2 CPC practices merged and 3 practices split into two practices.

- Although practices receive care management fees only for attributed patients of participating payers, changes made as part of CPC are expected to serve all patients in a practice. During CPC's first two program years, the number of both total and attributed patients was substantial, with total patients estimated at 2.8 million across all participating practices.

Table 2.1. Number of CPC participants at the start of the initiative and the end of program years 1 and 2

CPC participant	Start of CPC initiative (Fall 2012)	End of CPC program year 1 (December 2013)	End of CPC program year 2 (December 2014)
Regions	7	7	7
Payers[a]	31	29	29
Practices	502	492	479
Clinicians	2,172	2,158	2,200
Attributed Medicare FFS patients[b]	313,950	316,334	333,617
Attributed patients of other participating payers[c]	Not known	887,846	807,734
Other, nonattributed patients served by practices[c]	Not known	1,330,326	1,655,617
Total patients served by practices (attributed plus nonattributed)	Not known	2,534,506	2,796,968

[a] Reflects participating payers other than Medicare FFS. Payers participating in more than one region are counted once. When counted separately for each region, there are 37 participating payers in CPC in addition to Medicare.

[b] Source: ARC provides lists of attributed Medicare beneficiaries each quarter; these lists were de-duplicated to determine the number of patients ever attributed. This number differs somewhat from those that practices report.

[c] Source: Practices reported the number of attributed and nonattributed patients (calculated for the program year) in their PY2013 and PY2014 budget and Milestone submissions. Practices also submitted the total number of active patients in their practice as a point in time, which was used to calculate other, nonattributed patients served (by subtracting total attributed patients from total active patients). Mathematica and Bland & Associates analyzed the budget data for PY2013 and PY2014, respectively; reported differences between years should be interpreted with caution, given the potential for slight differences in the methods underlying the calculation of these statistics.

FFS = fee-for-service.

2.2. Participating regions and payers

CPC operates in seven geographically diverse regions. Across these regions, CMS initially leveraged the support of 39 payers—including national and regional private payers, as well as public payers. (When payers in more than one region are counted only once, there were 31 distinct payers at the start of CPC; see Table 2.2.) A few payers withdrew early in the initiative, but payer participation remained stable during CPC's second year. As of December 2014, 37 payers were participating. [17]

Participating payers differ in the lines of business in which they operate. For example, some participating payers are Medicaid managed care plans and offer products only in that line of

[17] Payers participating in more than one region are counted separately for each region in which they participate. In addition to Medicare, there are 29 distinct payers participating in CPC.

business; others operate several lines of business, such as commercial, Medicare Advantage, and self-insured. Payers also vary by which of their lines they decided to include in CPC. Outside of Medicare FFS, the most common lines of business in CPC are commercial (26 payers across all regions) and Medicare Advantage (19 payers across all regions). Medicaid managed care lines of business (11 payers) are also key in CPC, with representation in all regions except Arkansas and Oklahoma (which do not have Medicaid managed care contracts). Medicaid FFS participates—with CMS paying the CPC care management fees—in Arkansas, Colorado, Ohio, and Oregon.[18]

Table 2.2. Number of practices, clinicians, payers, and patients participating in CPC

	CPC-wide	Arkansas	Colorado	New Jersey	New York: Capital District Hudson Valley region	Ohio/ Kentucky: Cincinnati -Dayton region	Oklahoma: Greater Tulsa region	Oregon
Payers[a]								
At start (fall 2012)	39	4	8	4	5	10	3	5
Added[b]	1	0	1	0	0	0	0	0
Withdrawn[c]	3	0	0	0	1	2	0	0
In December 2013	37	4	9	4	4	8	3	5
In December 2014	**37**	**4**	**9**	**4**	**4**	**8**	**3**	**5**
Practices								
In October 2012	502	69	74	72	75	75	68	69
In March 2013 (analysis sample)	497	69	74	70	74	75	68	67
In December 2013	492	65	74	70	75	75	66	67
In December 2014	**479**	**61**	**71**	**68**	**74**	**75**	**63**	**67**
Specific changes in practice counts between October 2012 and December 2014								
Practice terminated	4	1	0	1	1	0	1	0
Practice withdrew	21	7	4	4	1	0	3	2
Practice split into two practices (adding 3 practices to total count)	3	0	1	1	1	0	0	0
Practice merged with another CPC practice (subtracting a practice from total count)	1	0	0	0	0	0	1	0
Clinicians (physicians, nurse practitioners, physician assistants)[d]								
In October 2012	2,172	262	332	254	286	264	265	509
In March 2013	2,183	261	351	252	290	268	264	497
In December 2013	2,158	248	359	246	300	265	236	504
In December 2014	**2,200**	**232**	**354**	**253**	**307**	**282**	**219**	**553**
Patients								
Medicare FFS beneficiaries								
In March 2013	313,950	54,661	41,890	41,643	39,171	44,486	43,740	48,359
In December 2013	326,100	56,947	44,875	42,999	40,316	44,385	46,401	50,177
In December 2014	**337,617**	**56,468**	**49,326**	**45,348**	**41,285**	**45,372**	**47,259**	**52,559**

[18] In Oklahoma, Medicaid collaborates in CPC and is counted as a participating payer but does not provide care management fees to participating practices.

	CPC-wide	Arkansas	Colorado	New Jersey	New York: Capital District Hudson Valley region	Ohio/ Kentucky: Cincinnati -Dayton region	Oklahoma: Greater Tulsa region	Oregon
Other attributed patients (from participating payers other than Medicare FFS)[e]								
In December 2013	887,846[f]							
In December 2014	**807,734**	**100,458**	**141,403**	**96,188**	**158,348**	**140,992**	**85,201**	**85,144**
Other, nonattributed patients served by practices								
In December 2013	1,330,326	174,351	218,970	172,261	129,880	210,144	170,557	254,163
In December 2014	**1,655,617**	**165,204**	**200,094**	**305,285**	**166,538**	**162,608**	**263,122**	**392,766**

Source: Payer information comes from Mathematica's tracking of payer participation; practice and clinician information comes from Telligen's tracking database; attributed Medicare FFS beneficiaries are based on information from ARC; other attributed patients (from other payers) and other nonattributed patients are identified based on information supplied by practices during the Milestone 1 budget reconciliation process.

[a] Some payers are participating in more than one region, so there are fewer unique payers than reported in this table.

[b] Aetna joined the Colorado region on October 1, 2013.

[c] In the New York region, MVP acquired Hudson Health Plan in September 2013; although both participated in CPC before the acquisition, we count this change as a withdrawal by Hudson Health Plan, leaving four unique payers in the New York region. In the Ohio/Kentucky region, Amerigroup lost its Medicaid managed care contract in Ohio as of July 1, 2013. In the fourth quarter of 2013, HealthSpan, a payer in the Ohio/Kentucky region with few attributed patients in CPC, withdrew from CPC, leaving eight payers in the region.

[d] Clinicians includes all physicians, nurse practitioners, and physician assistants with national provider identification numbers.

[e] Because of the varied sources of this information, these data should be considered only rough estimates of attributed non-Medicare patients. Depending on payer and region, lines of business may include commercial, Medicare Advantage, Medicaid FFS, Medicaid managed care, Children's Health Insurance Program, self-insured/administrative services only, and federal employee products.

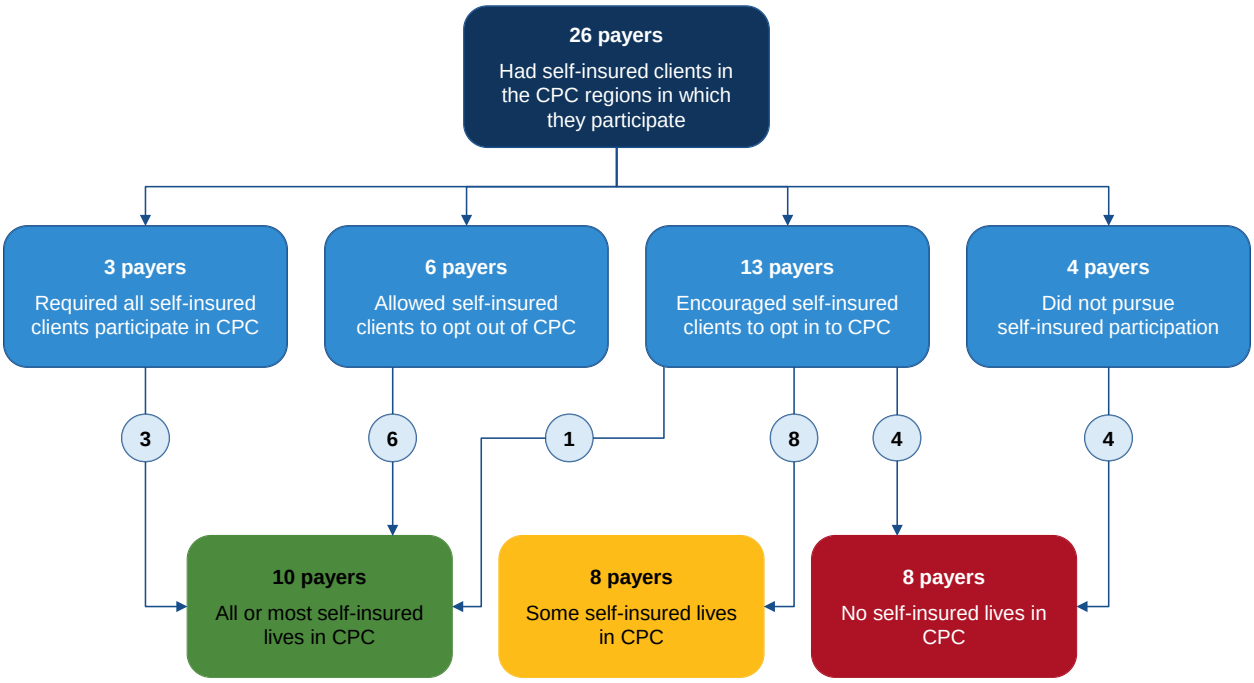
[f] Regional estimates for attributed patients were not calculated for 2013.

FFS = fee-for-service.

In addition to their fully insured business, 18 distinct payers have self-insured clients (employers or other entities) in the regions covered by CPC. Several of these payers operate in more than one region and use different approaches to involve self-insured clients in CPC, depending on the region. In the first year of the initiative, several stakeholders expressed concern about the relatively low level of self-insured participation in CPC. To further assess this topic, we collected additional information from participating payers on self-insured participation in summer 2014. For our analysis, we count each payer separately for each region in which they both participate and have self-insured business, bringing the number of payers with self-insured clients to 26.

Nearly all these payers are pursuing self-insured participation in CPC (Figure 2.1). Three payers require all self-insured clients to participate in the initiative, and another 19 give their clients the option of whether to participate. The remaining four payers decided not to pursue self-insured participation, most commonly because they have a small number of self-insured individuals in the region (such as 700 or fewer).

Figure 2.1. Self-insured participation in CPC in summer 2014



Most payers providing self-insured clients an option to participate in CPC are using an opt-in strategy in which they proactively invite client participation, most commonly by holding individual discussions with each client. Payers have experienced varying levels of success using this strategy, with most payers enrolling a subset of their clients. In general, payers reported the most success enrolling county or state employee benefit groups and health systems in CPC, although some payers have also recruited large private clients—including Walmart in Arkansas and General Electric in Ohio.

In contrast to the opt-in model, those payers automatically enrolling all self-insured clients in CPC unless they expressly opt out have achieved full (or nearly full) client participation. Recognizing the success of the opt-out model, one payer transitioned to this strategy in 2014. As client contracts are renewed, this payer is enrolling its self-insured clients in the initiative and anticipates doubling its self-insured participation as a result.

Colorado, New Jersey, and Ohio/Kentucky—regions with a significant portion of payers requiring self-insured clients to participate or using an opt-out enrollment policy—have the most self-insured lives attributed to CPC practices. In summer 2014, the number of self-insured lives in CPC varied widely by region, from a few hundred in Oklahoma to more than 100,000 in Ohio/Kentucky (with other regions including between an estimated 12,000 and 42,000 lives).

In all regions, participating self-insured clients are paying the CPC enhanced care management payments on a per member per month (PMPM) basis for their employees, as opposed to the payer (acting as a third-party administrator) covering those payments. Most payers indicated that asking clients to provide enhanced payments without having results to indicate successful outcomes and a positive return on investment for CPC was difficult.

Independent of their enrollment strategy (required, opt-out, or opt-in), the majority of payers suggested that demonstrating these results to employers will be critical to maintaining (or growing) self-insured client participation in CPC and other similar initiatives. Among those payers still working to convince self-insured clients to join CPC, most indicated that it was a "hard sell" without this evidence. Furthermore, several payers with high levels of self-insured participation said that clients continue to ask for this information and may withdraw from CPC without it.

In response to this need for information on CPC's effects, a few payers are developing reports or tools to help track the return on investment of CPC and other initiatives at the employer level. Two of the payers credited recent increases in self-insured participation to new data dissemination efforts showing evidence of promising effects. Other payers are continuing their strategy from the first year of CPC to educate employers on the patient-centered medical home (PCMH) model, which is similar to the CPC model, and the expected outcomes from CPC, to encourage their participation.

In addition to payers having individual discussions with employers and other organizations that self-insure, payers in two regions—Arkansas and Ohio/Kentucky—continue to be proactive and collaborative in pursuing these clients. In Arkansas, payers are holding joint payer and stakeholder discussions on employer participation in CPC and Arkansas Medicaid's similar multipayer initiative, the Arkansas Payment Improvement Initiative. Ohio/Kentucky payers and participating self-insured clients formed an employer committee, which has planned educational opportunities for employers not yet participating, including scheduled tours of CPC practices and a video on the PCMH model.

2.3. Participating practices and patients

Participating practices. Practice participation remained remarkably stable during the first two years of CPC, with less than 5 percent of practices leaving the initiative. As of December 2014, 479 of the 502 selected practices were still participating. A similar number of practices voluntarily withdrew from the initiative in PY2013 and PY2014 (7 and 10 practices, respectively). In PY2014, CMS also terminated four practices for not satisfactorily completing Milestone requirements during the initiative's first year. In addition, the composition of several practices changed in PY2014: one practice closed, and three practices split (resulting in six unique CPC practices).

Practices that withdrew from CPC included both struggling practices and high performers. In PY2014, six practices voluntarily withdrew from CPC due to challenges meeting CPC requirements (Table 2.3). These practices tended to be small and most often noted financial challenges to ongoing participation in CPC as their main reason for withdrawing. Practices that withdrew due to challenges meeting requirements or that were terminated by CMS also noted that the following factors contributed to their departure: insufficient or poor-quality support from CPC learning faculty (three practices from two regions), limitations of their EHR (three practices), and major difficulties in the overall management of the practice (two practices).

Table 2.3. Reasons for participating practices leaving CPC, through December 2014

Reason for practice leaving CPC	Total	PY2013	PY2014
Total number of practice departures for any reason	26	11	15
Voluntary withdrawals			
Early withdrawals from CPC (after practices assessed the terms and conditions of CPC participation just after its start)	5	5	n/a
Challenges completing CPC requirements	6	0	6
Decision to join an ACO participating in the Medicare Shared Savings Program	6	2	4
Practice closed/solo practitioner retired	4	3	1
Terminations by CMS	4	0	4
Changes to practice composition			
Practice merged with another CPC practice	1	1	0

Source: Information from CMS, Telligen, and, when possible, Mathematica exit interviews.
ACO = accountable care organization.

In addition, four practices with relatively advanced approaches to primary care delivery withdrew in PY2014 to join accountable care organizations (ACOs) participating in the Medicare Shared Savings Program (see Appendix A). Of these four practices, two (which belong to the same health system in Arkansas) had to withdraw from CPC when their health system decided to move all their primary care practices into an ACO. These practices indicated that new work completed under CPC—such as risk stratifying their patients and hiring care managers—will help them be successful under the ACO program. In contrast, the other two practices felt their health system had already met the CPC Milestones before the start of the initiative and were disappointed that they could not invest CPC resources in other areas (for example, to hire a dental provider). These practices decided to join an ACO to increase their flexibility to implement innovative changes. Although the four practices leaving CPC to join ACOs will no longer receive PBPM payments from Medicare, all four will continue to receive payments from some non-CMS payers through other statewide initiatives or negotiated contract arrangements.

Although participation has remained relatively stable so far, some stakeholders remain concerned about sustaining practice participation during the last two years of the initiative. Some payers report that ACOs are actively encouraging some practices to drop out of the CPC program to join the Medicare Shared Savings Program. In addition, payers and other stakeholders have expressed concern that CPC practices may leave the initiative so they can bill Medicare for the Chronic Care Management (CCM) fee, introduced by CMS in January 2015, for attributed Medicare FFS beneficiaries (see the CMS website for a description of the Medicare Shared Savings Program and the CCM fee; see Appendix A for a description of the differences between CPC and each initiative).

Participating clinicians. In March 2013, 2,183 primary care clinicians (physicians, nurse practitioners, and physician assistants) were providing care at the 497 practices participating at that time (Table 2.2). Most regions had 240 to 290 participating clinicians; however, Oregon and, to a lesser extent, Colorado, had considerably more. This reflects large differences in average

practice size across regions. In particular, Oregon's average practice size of more than seven clinicians means its practices are much larger than those of other CPC regions (which had an average of about 3.6 to 5.0 physicians per practice). As of December 2014, the 479 CPC practices included 2,200 participating clinicians (4.6 per practice on average), which represents a slight increase in the number of clinicians per CPC practice. This increase may reflect general growth in CPC practices, an overall market trend toward practice consolidation (with practices merging or being acquired by hospitals or health systems), or both.

To understand any changes in the total number of clinicians among the same group of practices, we examined the number of clinicians over time in the 479 practices that remained active participants (data not shown). Among practices participating in CPC in both March 2013 and December 2014, the number of clinicians in the initiative remained stable (2,178 in March and 2,195 in December). However, changes in the number of clinicians during this time varied by region: Oklahoma saw a decrease of 14 percent, and Oregon saw an increase of just over 7 percent.

Participating patients. Participating practices reported having approximately 2.8 million active patients in the program's second year, including both attributed and nonattributed patients (Table 2.2). Forty-nine percent of these patients were attributed to CPC practices by Medicare FFS and other participating payers. For these patients, practices receive enhanced care management fees, as discussed in detail in Chapter 3. However, participating practices are required to implement changes across their entire practice so that all patients they serve receive benefits, regardless of patient attribution.

3. WHAT PAYMENTS, DATA FEEDBACK, AND LEARNING DO CMS AND OTHER PAYERS PROVIDE TO CPC PRACTICES?

Through CPC's unique public-private partnership, CMS and participating payers provide CPC practices with payments, data feedback, and learning supports. The intensity of these supports varies by region and practice; as a whole, however, they represent a substantial intervention. In this chapter, we describe the supports that CMS and other payers provided to practices in PY2014, discuss changes to those supports from the first program year, outline relevant barriers and facilitators to providing those supports, and highlight practice perspectives on the usefulness of the supports they received.

3.1. Key takeaways on CPC supports to practices

- In PY2014, CPC practices received sizable enhanced payments from CMS and other participating payers, in addition to their usual revenues: total CPC care management fees for the median practice were about $203,949 ($64,142 per clinician), which is equivalent to 14 percent of 2014 total practice revenue for the median practice. This translates to $117 annually per attributed patient, or $48 per active patient.[19]
- Medicare and most other payers maintained the same care management fees in PY2013 and PY2014. Medicare FFS care management fees for patients attributed to CPC practices are typically higher than fees paid by other payers, which reflects in part the greater needs of Medicare FFS patients. Medicare FFS accounted for about 30 percent of all attributed patients in CPC but 60 percent of enhanced payments. CMS and at least one-third of other payers reduced the PMPM payments to practices starting in January 2015.
- Medicare and most other participating payers will provide practices the opportunity to share in savings accrued during the last three years of the initiative. Specifically, payers will share a portion of any savings accrued during 2014, 2015, and 2016 with practices approximately 6 to 12 months after the end of each calendar year.
- Payers' approaches to calculating shared savings vary on a range of factors, including the level at which savings are calculated, the method used to calculate expenditures, and the quality measures used to determine whether practices are eligible to share in savings.
- Practices received practice-level feedback reports from Medicare FFS and about two-thirds of other payers, and they received patient-level data files from Medicare FFS and more than half of other payers. In the spring 2014 practice survey, nearly three-quarters (73 percent) of practices reported reviewing Medicare FFS practice-level reports all or most of the time, versus 48 percent of practices for other payers' practice-level reports. A smaller proportion of practices reviewed patient-level data files than reviewed the reports, according to the 2014 practice survey; 46 percent of practices reviewed Medicare FFS patient-level data files and 39 percent reviewed other payers' patient-level data files all or most of the time.

[19] The payment statistics presented in this section are based on an analysis of the PY2014 budget data by Bland & Associates. The methods used to calculate these statistics may differ slightly from those used by Mathematica to calculate the PY2013 statistics.

- Although practices report seeing value in using data feedback to guide care delivery, deep-dive practices (a small sample of CPC practices selected for intensive study) frequently noted their staff do not have the time or resources to effectively use the reports, the reports lack actionable data, or both.[20] For example, practices commonly noted that the feedback reports do not differentiate between unnecessary and appropriate costs for care consistent with standards of care.
- CMS and its contractors facilitated practice transformation and provided opportunities for peer-to-peer learning through a wide range of learning supports in PY2014, including regional webinars and all-day in person meetings, cross-regional learning activities, individualized practice coaching, and a CPC website (called the "collaboration site"). Some practices also received supplemental support from payers or other stakeholders in their region through other programs.
- Regional learning faculty (RLF) indicated that individualized practice coaching most commonly focused on risk stratification and care management, shared decision making, and using data to guide improvement. In the spring 2014 practice survey, the percentage of practices reporting at least monthly interactions with RLF ranged from 63 percent in Oregon to more than 90 percent in Arkansas and Colorado.
- Nearly all practices regularly participate in CPC learning activities, and most are satisfied with the level of support they receive. Deep-dive practices most valued individualized practice coaching from RLF and opportunities to network with and learn from other practices.

3.2. Payments to CPC practices

CMS and other payers are making substantial enhanced payments to CPC practices for investment in primary care transformation, in addition to their usual payments for services. These payments are in the form of PMPM nonvisit-based care management fees for patients attributed to CPC practices. (Medicare FFS beneficiaries were attributed quarterly to CPC practices that delivered the plurality of their primary care visits during a two-year lookback period; other payers use their own attribution methods.) Practices are receiving these payments throughout the four-year initiative to allow them to "invest in the infrastructure, staffing, education, and training necessary for delivery of the five comprehensive primary care functions."[21] Practices may also share in any savings in total health care costs incurred by CMS and most other payers in the second, third, and fourth years of the initiative, provided there are savings.

[20] We conducted in-depth interviews with clinicians and staff at 21 deep-dive practices (3 per CPC region) during site visits in 2013 and by telephone in 2014.

[21] Memoranda of understanding (MOUs) between CMMI and each CPC participating payer.

3.2.1. CPC provided substantial funding to participating practices for investing in primary care transformation

For each Medicare beneficiary attributed to a CPC practice, CMS paid risk-based care management fees ranging from $8 to $40 PBPM in CPC's first two years. The PBPM payment (which averaged $20 in CPC's first two program years) declines to an average of $15 in the latter two years of the intervention. The fee level was based on the patient's hierarchical condition category (HCC) score (a measure of risk for subsequent expenditures) when a beneficiary was first attributed to a CPC practice. Other payers (including Medicare Advantage plans, Medicaid managed care, commercial insurers, and, in some regions, CMS on behalf of Medicaid FFS agencies) paid lower PMPM amounts on average, in part reflecting the lower average acuity level for their patients.

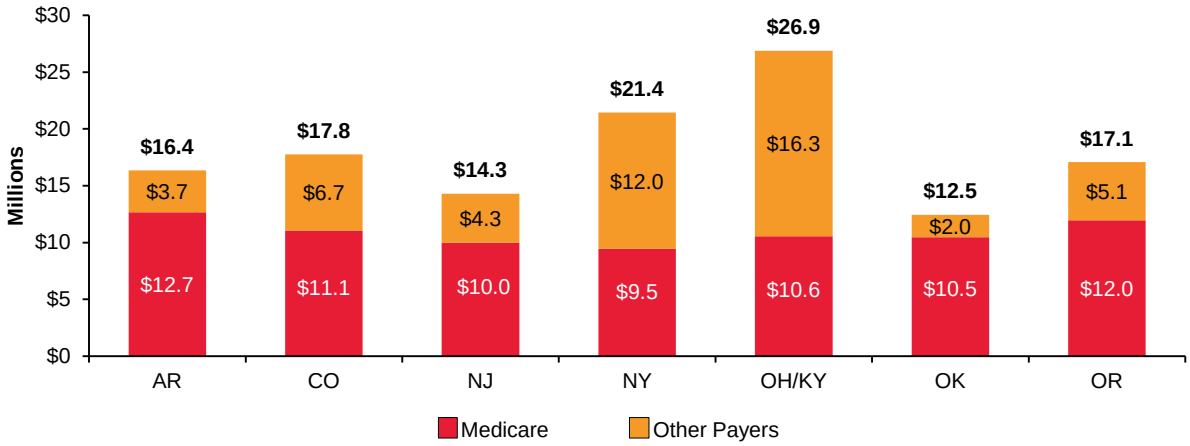
According to data from Medicare and information on payments from other payers as reported by participating practices in annual Milestone budget data, CPC's enhanced payments to practices totaled $267.5 million from the start of the initiative through December 2014. Payments for PY2014 totaled $126.2 million, ranging from $12.5 million in Oklahoma to $26.9 million in Ohio/Kentucky (Figure 3.1).

These payments represent a substantial infusion of revenue. CPC payments to the median practice were about $227,849 ($70,045 per clinician) in PY2013, which is equivalent to 19 percent of practices' total revenues in 2012. In PY2014, CPC payments to the median practice were about $203,949 ($64,142 per clinician), reflecting about 14 percent of practices' total revenue in 2014.[22] The 25th and 75th percentiles of annual CPC funding per clinician were approximately $35,961 and $77,858 for PY2014. The median funding was $117 per attributed patient and, when spread across all patients (whether attributed or not), $48 per active patient.

Median CPC payments per practice ranged from $148,138 in New Jersey to $323,526 in Ohio/Kentucky. Median payments per clinician ranged from about $43,642 in Oregon to $89,085 in Ohio/Kentucky (Figure 3.2).

[22] Mathematica and Bland & Associates completed the analysis of the PY2013 and PY2014 budget data, respectively; therefore, the methods underlying the calculation of these statistics may not be completely comparable across program years.

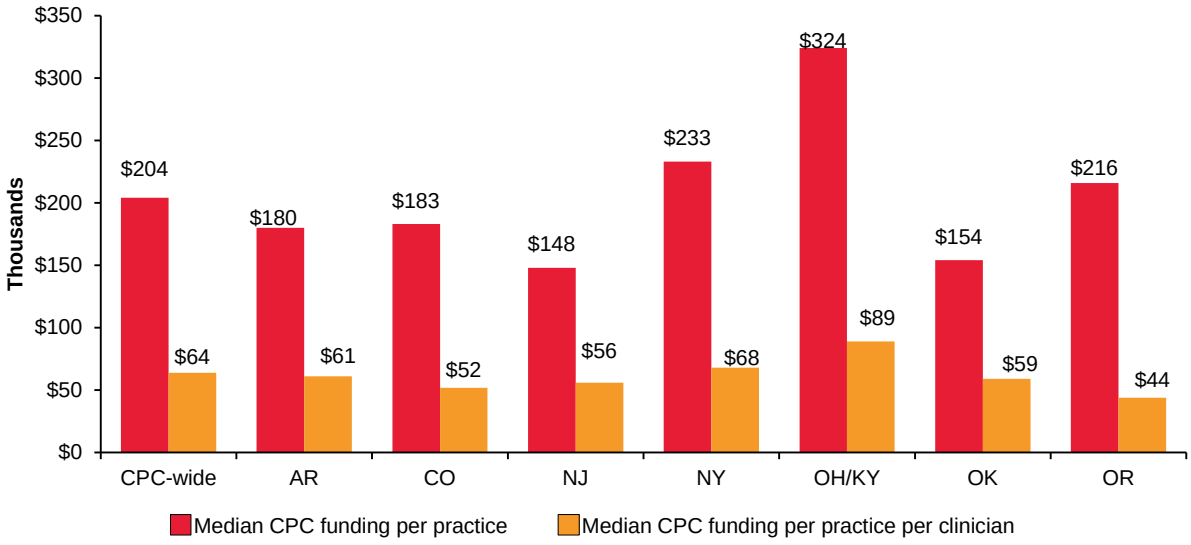
Figure 3.1. Total CPC payments from Medicare and other payers, by region, in PY2014



Source: Bland & Associates analysis of PY2014 budget data.

Note: Although PY2013 included several months of payments in late 2012, we estimated an annualized payment for 2013, in order to compare total 2013 and 2014 payments. The cumulative payments for PY2014 across all payers and regions—which totaled $126.2 million—were slightly higher than cumulative payments made in calendar year 2013—which were roughly $119.1 million. However, Mathematica and Bland & Associates analyzed the budget data for PY2013 and PY2014, respectively; reported differences between years should be interpreted with caution, given slight differences in the methods underlying the calculation of these statistics.

Figure 3.2. Median CPC funding per practice and per clinician, CPC-wide and by region, for PY2014

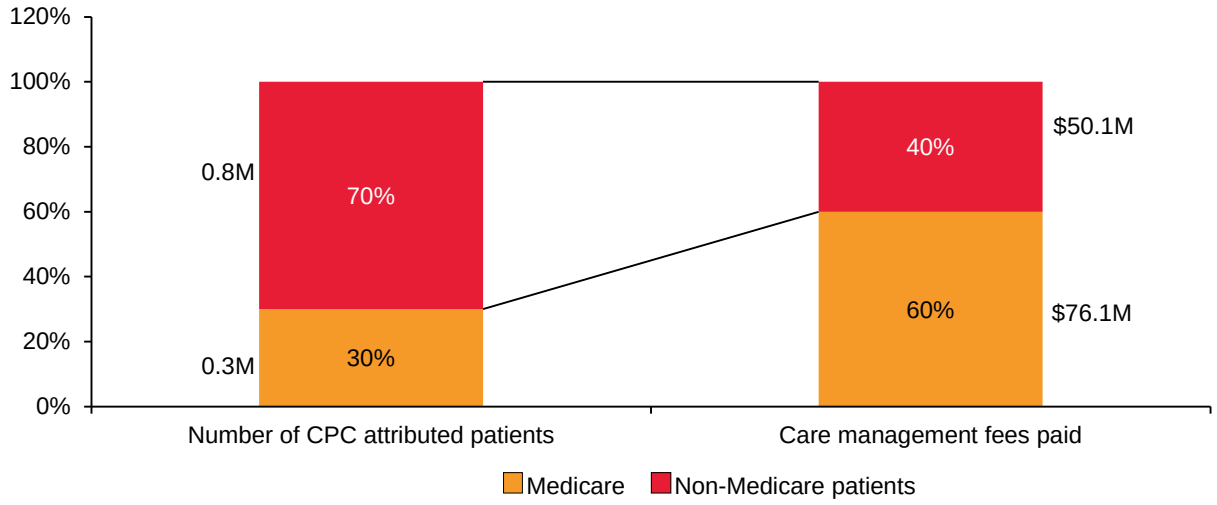


Source: Bland & Associates analysis of PY2014 budget data.

CPC enhanced payments for Medicare FFS patients totaled more than $76 million during PY2014, comprising 60 percent of total CPC enhanced payments to practices (Figure 3.3).[23] During the first two years of CPC, CMS paid participating practices an average of $20 PBPM for each attributed Medicare FFS beneficiary, in addition to FFS payments for regular services and CPC enhanced payments for Medicaid FFS beneficiaries in four regions. CMS risk-adjusts the PBPM payments for Medicare FFS beneficiaries; by design, half the payments in each region are for attributed beneficiaries in the highest HCC risk quartile (Figure 3.4). Following two years of higher payments to support practices' upfront investments, CMS decreased the average care management fee to $15 PBPM starting in January 2015.

During the first two years of the initiative, CMS paid practices a cumulative total of $166.6 million in CPC enhanced payments for Medicare FFS patients. The cumulative payments for PY2014—which totaled $76.1 million—were similar to the payments made in calendar year 2013—which were roughly $75.9 million.[24] For PY2014, Medicare FFS payments ranged from $9.5 million in New York to more than $12 million in Arkansas. The higher payments in the Arkansas region reflect the fact that the region has more attributed Medicare FFS patients than other regions.

Figure 3.3. Medicare FFS enhanced payments for CPC account for a large share of total CPC payments to practices in PY2014



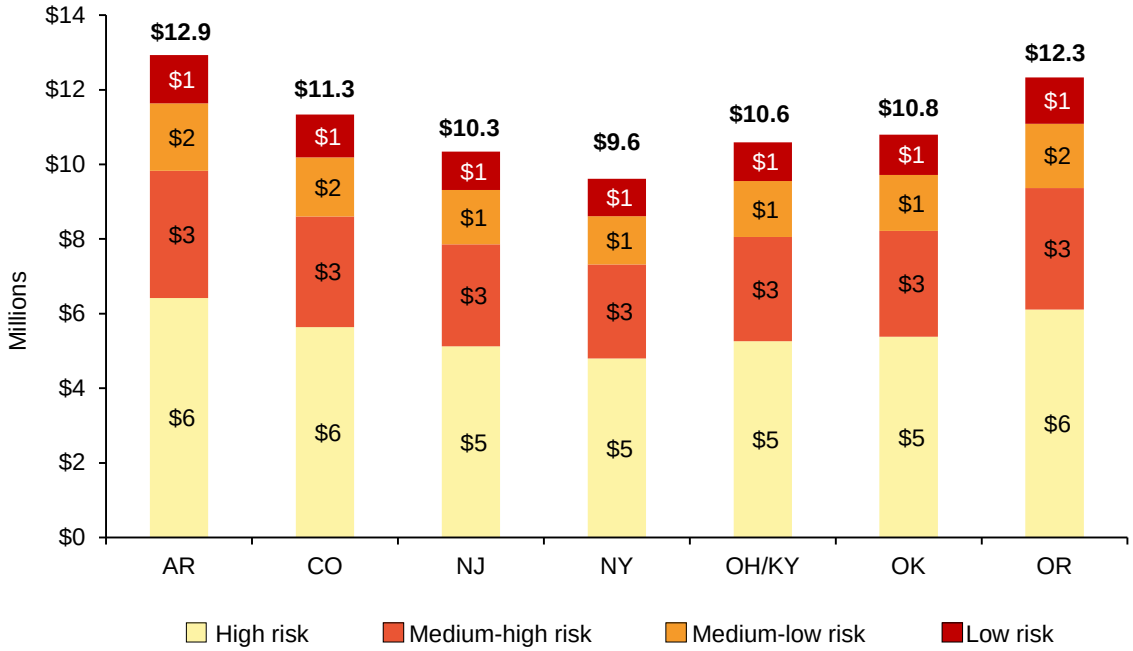
Source: Bland & Associates analysis of PY2014 budget data as reported by participating practices. Note, however, that CMS care management fees shown above reflect CMS-reported payment amounts rather than practice-reported CMS payment amounts. The difference between CMS-reported and practice-reported payments ranged widely, with the median practice slightly underreporting payments received from CMS. The statistics reported above also excluded some practices' payments from the calculations based on data cleaning procedures.

FFS = fee-for-service; M = million.

[23] Although Medicare's care management fees totaled approximately $77.6 million, the figure of $76.1 million reported here is lower because of data-cleaning procedures that excluded payments for practices that appeared to have data errors.

[24] Although PY2013 included several months of payments in late 2012, we estimated an annualized payment for 2013, in order to compare 2013 and 2014 payments.

Figure 3.4. CPC payments from Medicare for attributed Medicare FFS patients, by region and risk quartile, for PY2014 (January 1 through December 31, 2014), in millions of dollars



Source: ARC, subcontractor to CPC's implementation contractor Telligen, provided data on the payment risk quartile for each beneficiary. We multiplied the payment for that risk quartile by the number of beneficiary-months in that risk quartile to determine total payments. The total of the calculated Medicare payments differs slightly from the totals reported by practices in their PY2013 budget reconciliation data.

Notes: For payment purposes, CMS placed beneficiaries into risk quartiles based on their HCC scores. CMS automatically places beneficiaries dually eligible for Medicaid and ESRD into the highest-risk quartile.

FFS = fee-for-service; ESRD = end-stage renal disease; HCC = hierarchical condition categories.

Non-Medicare FFS payers paid practices $50.1 million in CPC enhanced payments, or about 40 percent of total CPC funds, for PY2014.[25,26] All but one of the non-Medicare FFS payers use PMPM payments for their enhanced CPC payments to practices; rates vary considerably by line of business (Table 3.1).[27] In general, non-Medicare FFS payers offer PMPM payments that are lower than Medicare FFS payments, reflecting in part the lower average risk profile of their patients. The enhanced payments of Medicare Advantage plans are roughly 25 to 50 percent less than the Medicare FFS PBPM payment, reflecting Medicare Advantage's relatively healthy population compared to Medicare FFS. Nonetheless, relative to other lines of business, Medicare Advantage serves an older population with substantially higher

[25] We include CPC enhanced payments for attributed Medicaid FFS patients here, even though CMS is paying for all or most of these payments.

[26] These statistics are based on an analysis of the PY2014 budget data by Bland & Associates. The methods underlying these calculations may not be completely comparable to those used by Mathematica to calculate the PY2013 statistics.

[27] One payer uses an at-risk capitation model.

expected health needs on average and pays the highest PMPMs of the non-Medicare FFS payers—often about three times the PMPM paid for commercial members, and three to five times the PBPM paid for Medicaid beneficiaries. However, Medicaid plans covering special populations (for example, aged, blind, and disabled beneficiaries) make PMPM contributions on par with Medicare Advantage levels.

Table 3.1. Range of participating payers' PMPM payments for PY2013 and PY2014

Payer type	PMPM range	Most common PMPM
Medicare FFS	$8–$40	Average PBPM is $20 ($8/$11/$21/$40 depending on HCC risk score)
Medicare Advantage	$4–$20	$15
Commercial, third-party administrator, administrative services only	$2–$8	$5
Medicaid managed care	$2.52–$15	$3, $5
Medicaid FFS and CHIP	$0.50–$15	$3–$4

Source: Payer-provided pre-interview worksheets, MOUs, and payer interviews.

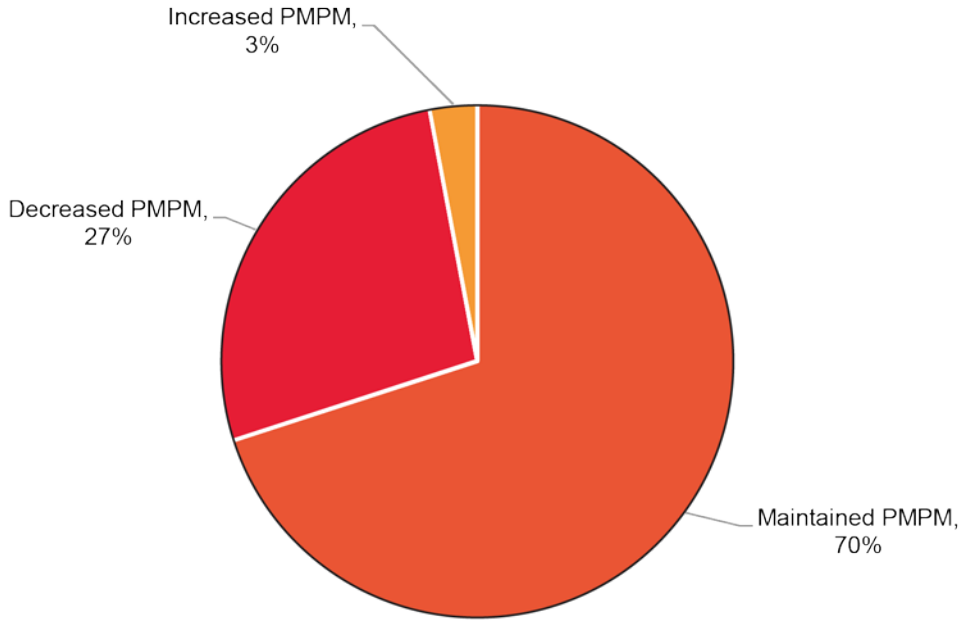
Note: Most payers maintained the same PMPM payment level in PY2013 and PY2014.

CHIP = Children's Health Insurance Program; FFS = fee-for-service; HCC = hierarchical conditions categories; MOU = memorandum of understanding; PBPM = per beneficiary per month; PMPM = per patient per month.

Most payers maintained the same PMPM payment level in PY2013 and PY2014, with a few exceptions. As planned since the start of the initiative, one national payer slightly reduced its PMPM payments for Medicare Advantage beneficiaries in a few regions. In addition, at the request of self-insured clients, two payers reduced the PMPM payment for self-insured lives (previously equal to the amount paid for fully insured groups).

For PY2015, unlike Medicare FFS, most other payers (70 percent) continued to maintain their same PMPM level (Figure 3.5). Moreover, one payer doubled its CPC payments as part of a corporate-wide strategy to use alternate payment strategies to shift additional resources to primary care. Payers that did decide to decrease their PMPM payments made reductions ranging from 19 to 35 percent of their prior year's payment, in the range of Medicare's 25 percent reduction. In many cases, payers planned these reductions from the outset of CPC and outlined them in their initial CPC contracts with practices.

Figure 3.5. Proportion of participating payers that reduced, maintained, or increased CPC PMPM payments starting in PY2015



Source: CPC payer worksheets and Mathematica interviews with CPC payers in summer and fall 2015.

Note: Thirty-three payers are included in this analysis. Payers operating in more than one region are counted multiple times, once for each region in which they participate. Four CPC payers are excluded from this figure: one is not providing practices enhanced payments, one is using an at-risk capitation model, and two opted not to participate in interviews.

3.2.2. Practices used CPC enhanced funding to pay for staff labor and other supports

Practices used CPC enhanced funding to support a variety of labor and nonlabor costs. Labor costs were the largest area of spending, accounting for about $117 million, or about 85 percent of practice-reported CPC spending in PY2014 (Figure 3.6). The largest categories of labor costs were physicians ($34 million), registered nurses ($17 million), and medical assistants (nearly $11 million). Nonlabor costs included consulting fees or vendors; electronic health record (EHR), information technology (IT), or portals; non-IT equipment; office space; and training or travel. The category of EHR, IT, or portal costs accounted for the largest nonlabor spending; practices spent about $6.5 million for CPC on these costs, ranging from $284,843 in Oregon to nearly $1.8 million in Ohio/Kentucky (Table 3.2).

Figure 3.6. Practice-reported CPC spending across regions for selected cost categories, in millions

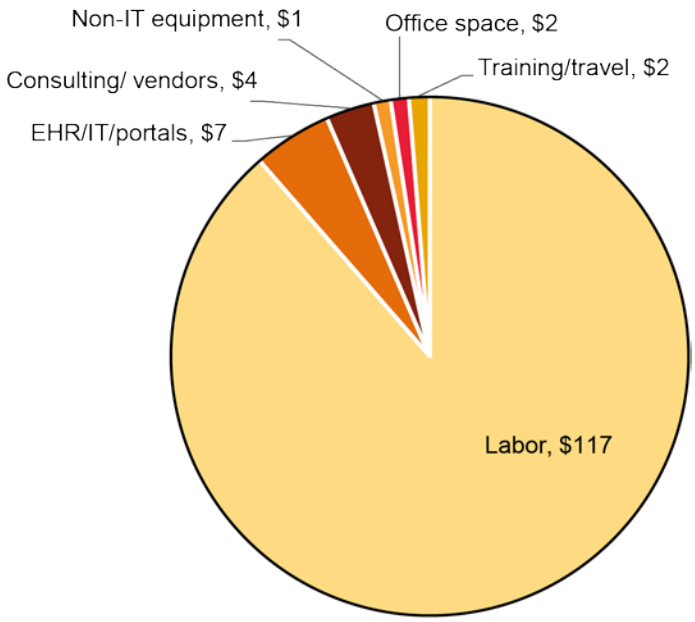


Table 3.2. Practice-reported CPC spending for selected cost categories

Region	Labor	EHR/IT/portals	Consulting/ vendors	Non-IT equipment	Office space	Training/travel
New York	$20,541,277	$695,345	$381,278	$89,504	$73,054	$164,811
Oregon	$20,340,274	$284,843	$269,836	$28,227	$138,200	$84,183
Ohio/Kentucky	$18,485,375	$1,798,150	$2,234,994	$470,120	$44,075	$511,235
Colorado	$17,771,640	$1,325,513	$257,276	$252,865	$697,725	$350,672
New Jersey	$15,976,865	$719,692	$193,352	$61,726	$98,260	$145,663
Arkansas	$14,070,262	$1,180,885	$372,064	$431,273	$358,702	$225,051
Oklahoma	$9,981,552	$534,321	$256,032	$57,790	$161,075	$177,682
CPC-wide	$117,167,245	$6,538,747	$3,964,833	$1,391,505	$1,571,092	$1,659,297

Source: Bland & Associates analysis of PY2014 budget data. In addition to the cost categories reported here, practices spent another $6 million on other CPC-related costs.

EHR = electronic health record; IT = information technology.

3.2.3. CMS and most other payers plan to provide an opportunity for shared savings to practices

As of summer 2014, CMS and most other CPC payers (19 private payers and Arkansas Medicaid) were committed to offering CPC practices the opportunity to share in any net savings in health care costs that accumulate during the last three years of the initiative.[28,29] Three other regional private payers were still debating whether to offer shared savings. These payers expressed concerns about the level of administrative resources required to calculate savings and about their ability to calculate savings with confidence given their small numbers of attributed patients in CPC. The remaining five payers decided not to participate in shared savings because they had few patients attributed to CPC practices (Ohio Medicaid and Oregon Medicaid) or because they were offering practices enhanced payment opportunities through other initiatives, such as pay-for-performance programs or risk-based capitation (Colorado Medicaid, one regional payer, and one large national payer).

CMS and the other payers participating in shared savings each developed their own approaches. CMS released its Shared Savings Methodology for Medicare FFS at the end of PY2013 and provided additional details at the end of PY2014 (see Box 3.1 and Table 3.3).[30] CMS and a number of other payers released their first shared savings results in fall 2015, reflecting PY2014 performance.[31]

[28] Although CMS pays the enhanced payments for Medicaid FFS beneficiaries in CPC, CMS is not funding Medicaid FFS shared savings programs. As of summer 2014, Arkansas Medicaid was the only Medicaid FFS program participating in shared savings for CPC. Arkansas Medicaid is offering CPC practices the same shared savings program offered through its SIM-funded program.

[29] Recent evidence suggests the addition of shared savings that are contingent on quality of care and cost savings may provide important incentives to practices in improving both outcomes (Friedberg et al. 2015).

[30] For more information on the methods CMS used to calculate shared savings, see https://innovation.cms.gov/Files/x/Comprehensive-Primary-Care-Initiative-Shared-Savings-Methodology-PDF.pdf.

[31] For information on Medicare's PY2014 shared savings and quality results for CPC, see https://innovation.cms.gov/Files/x/cpci-ssqualdatasummary2014.pdf. We will discuss Medicare's shared savings results in the next annual report.

Box 3.1. CMS's approach to CPC shared savings for attributed Medicare FFS beneficiaries

- **Calculating savings at the regional level.** Savings are calculated at the CPC region level, instead of at the practice level, to ensure reliable expenditure estimates and to encourage practices in each region to collaborate.

- **Determining baseline expenditures at the regional level.** CMS will use historic claims experience from calendar year 2012 to determine baseline expenditures for the region. They will include all Medicare Part A and Part B expenditures, except for Disproportionate Share Hospital payments and Indirect Medical Education payments. To account for demographic differences, CMS will analyze beneficiaries in separate entitlement categories. So that savings opportunities are preserved, outliers will not be excluded from baseline expenditure calculations. CMS will not rebase expenditures over time but rather will use the 2012 historical claims experience as the base throughout the CPC initiative.

- **Estimating savings.** The baseline expenditures will be trended forward to determine the expenditure targets for 2014, 2015, and 2016. Expenditure targets will be compared to actual expenditures to determine net savings. Actual expenditures will include the care management fee payments made for CPC, in addition to other Medicare Part A and B expenditures. CMS will share savings with participating practices that qualify only if the net difference between projected and actual expenditures exceeds a minimum savings rate (MSR), which represents the point at which savings are considered reliable (Table 3.3). The amount CMS shares with practices depends on the level of savings in the region.

- **Distributing savings across practices within a region.** For a region that has savings, the proportion of savings each practice is eligible to receive will equal the percentage of regional CPC care management fees that went to the practice, which takes into account the number and acuity of attributed Medicare FFS beneficiaries in a given practice. CMS will then distribute savings to practices that achieve a minimum quality score. Eligible practices will not compete with each other to earn their portion of the region's savings. If practices do not meet the minimum quality score, they do not qualify for shared savings, and the amount they could have received is returned to the Medicare trust fund.

- **Calculating practices' quality score.** To qualify for savings achieved in PY2014 (and distributed in PY2015), practices had to report eCQMs at the practice level and achieve a minimum quality score calculated using performance on patient experience and claims-based measures. For CPC's final two years, CMS plans to use benchmarks to award points for performance on eCQMs, as well as patient experience and claims measures. Appendix B provides additional detail on CPC quality performance measures.

Table 3.3. CMS shared savings corridors: Percentage of savings shared with CPC practices

Savings corridors	Proportion of savings shared with region
If the net percentage savings (S) is….	
S≤1.0%	0%
1.0%<S≤2.3%	10% of savings between 1% and S%
2.3%<S≤3.5%	10% of savings between 1% and 2.3%; plus 30% of savings between 2.3% and S%
S>3.5%	50% of savings between 0% and S%

Source: Comprehensive Primary Care initiative Shared Savings Methodology released September 2015 (https://innovation.cms.gov/Files/x/Comprehensive-Primary-Care-Initiative-Shared-Savings-Methodology-PDF.pdf).

At the time of our interviews, 13 of the 20 payers committed to offering shared savings had finalized or nearly finalized their plans for shared savings. Many payers based their methodology for CPC on a model their organization had developed for prior or concurrent programs; as a result, some aspects of these approaches differ from CMS's methodology. Other payers used CMS's approach as a model for their program to increase consistency across approaches and thus make it easier for practices to understand. Here, we describe the approaches used by the 13 payers, highlighting how their shared savings models differ from each other and from CMS's model:

- **Similar to CMS, 8 of 13 payers plan to calculate savings at the regional level.** Payers using this approach noted that pooling patients across the region allows them to calculate savings with more confidence than is possible at a health system or practice level. Several payers indicated that this approach will allow smaller practices to participate in shared savings; such practices were excluded from their prior corporate programs, which required practices to meet certain thresholds (for example, at least 5,000 attributed members) to participate. When savings are calculated at the regional level, payers use the number and acuity of attributed patients to determine the proportion of savings shared with a given practice. In contrast, some payers are calculating savings at the practice or health system level, which they indicated large providers prefer over regional pooling. Some of these payers are excluding practices from CPC shared savings that do not meet minimal thresholds for attributed patients; others, however, are allowing small practices to decide to pool their patients with other practices of their choice to surpass the thresholds for the number of members they must have to be eligible for savings.

- **Unlike CMS, more than two-thirds of payers (9 out of 13) indicated they will remove outlier costs from calculations of expenditures in each program year.** Typically, payers planned to exclude patients with annual costs above a specified amount, which varied from $75,000 to $250,000. A few payers plan to implement a different approach, in which they adjust downward the utilization for individual patients identified as abnormally high-cost.

> "We wanted to be in step [with CMS's approach to calculating shared savings] enough not to create issues and concerns among providers."
>
> *—Arkansas payer*

- **About half of payers plan to use a minimum savings rate (MSR) to address the reliability of savings estimates.** Like CMS, these payers will share savings with practices that accrue above a minimum amount at which savings estimates are considered to be statistically reliable. The planned MSR percentage ranged from 1.5 to 2.0 percent. One payer not using an MSR indicated it would "rather have [practices] buy into the concept [of shared savings] ... at this point" and enable them to share in any savings.
- **Payers differ in the proportion of savings they plan to share with practices.** Like CMS, some payers are using "savings corridors" and varying the proportion of savings shared with practices, depending on the level of savings achieved. Others are sharing a fixed proportion of savings (for example, 30 or 50 percent), whatever the savings level is. A few payers are capping the total amount of savings that will be shared with practices (for example, savings shared cannot equal more than 10 percent of the total FFS payments to practices for the prior year).
- **All payers are using quality performance to determine whether practices are eligible to participate in shared savings**; however, payers are using different measures. Payers in Arkansas and Oregon agreed to use the same quality measures and benchmarks as CMS to "simplify the situation for providers." Although most other payers are using some of the same measures as CMS in their quality determination process, they are also using measures from existing corporate programs. Specifically, several payers decided to include child-focused measures (such as asthma or immunization measures) to determine quality scores, because their plans serve children. Similar to CMS, most payers are awarding savings to practices that pass a quality threshold (that is, achieve at least a minimum score across eligibility scoring criteria). Other payers vary the proportion of savings a practice receives, depending on their quality performance.
- **Many deep-dive practices were skeptical about whether they would receive shared savings, the timing in which shared savings would be received, and the methods used to calculate the amount of savings practices receive.** Deep-dive practices indicated they are not expecting substantial amounts of shared savings because they believe their payment will be a small fraction of the savings shared across a region. A few practices were also skeptical of the methods and quality of data that will be used to calculate shared savings. For example, one physician noted, "I don't have any control over the data and [have] no way to evaluate it."

3.3. Data feedback provided to CPC practices

In addition to payments, CPC practices receive regular data feedback (reports with practice-level metrics and patient-level data files) from CMS and most other payers. Practices can use the feedback reports and data files to (1) understand how their practice compares to other practices, (2) identify the cost drivers of their patients, and (3) identify patients who are high cost or heavy users of hospital and emergency department (ED) services, along with their diagnoses and which hospitals they tend to use. The feedback reports and data files from Medicare and other payers are meant to be used with the larger universe of data available to practices (including their own EHR data).

3.3.1. CMS and most other payers provide practices with data feedback

Since April 2013, CMS has provided practices with access to quarterly Medicare FFS practice-level feedback reports and patient-level data files. These reports provide practices with indicators on their attributed Medicare FFS patients, including demographic, cost, and service utilization information, as well as patient, practice, and clinician and staff survey results, all compared to other CPC practices in the region. Practices can download the practice-level report and patient-level data files from the CPC web application. The annual report covering PY2013 provided details on the Medicare FFS report content (Taylor et al. 2015).

In PY2013 and PY2014, about two-thirds of non-Medicare CPC payers provided some form of feedback to practices. As of summer 2014, payers' reports primarily contain measures of cost and service utilization and, to a lesser degree, quality performance (such as rates of colorectal cancer screening and childhood immunizations). Most payers provide these reports at the practice level and quarterly. About half of payers include trends in practice performance. Some use graphs to compare practices' performance in the current and prior reporting periods, and a smaller number also compare a practice's performance to the performance of other CPC practices in their region.

In addition to practice-level reports, a little over half of payers provide patient-level data files to practices. Payers differ in the type of information included in these reports. Some reports provide lists of high-cost patients or patients with inpatient admissions or ED use. Notably, several payers provide this information weekly or daily, so practices can immediately identify patients who need follow-up. In addition, some payers provide practices with lists of care gaps for patients (such as patients due for breast cancer screening or diabetic eye exams). Payers noted that practices like to know about "the care opportunities to go after," and lists of gaps in care give practices concrete areas for improvement.

Payers in all but one region took steps to develop a common approach to data feedback for practices. In their MOUs signed at the start of CPC, CMS and the other payers agreed to develop a common approach to providing data feedback to practices. One of the stated goals in the MOU is improving the flow of health care cost and utilization data to primary care practices to support them in their efforts to improve care outcomes through care coordination and quality improvement. Most payers acknowledged that practices were asking for, and would benefit from, a common approach to data feedback. As one payer indicated, "We're asking [practices] to transform, make changes. It's hard to do that kind of transformation without knowing where you are today. [With separate, inconsistent reports from payers,] practices don't know what to do to transform."

During the first two years of the initiative, payers in all regions but New Jersey made progress in developing a common approach to data feedback (Table 3.4). Payers pursued the following approaches in PY2014, with varying degrees of success:

- Producing a single report for practices that aggregates data on cost and service utilization measures across payers in Colorado, New York, Ohio/Kentucky, and Oklahoma. (New York, however, decided not to continue work on aggregation in PY2015.)

- Aligning their individual payer reports in terms of content, structure, or both, in Arkansas, Ohio/Kentucky, and Oregon. (Ohio/Kentucky payers began producing aligned reports as an interim solution while continuing data aggregation efforts.)

Because one of New Jersey's four participating payers has the majority of the region's commercial market share, payers in that region have opted not to pursue data aggregation or aligned reporting.

Table 3.4. Regional approaches to data sharing in PY2014

	AR	CO	NY	NJ	OH/KY	OK	OR
Pursuing data aggregation		X	X		X	X	
Pursuing separate but aligned reports	X				X		X
Not pursuing a common approach to data sharing				X			

Source: Notes from multipayer and multistakeholder meetings and interviews with payers and multistakeholder faculty.

Note: New York decided to stop pursuing data aggregation in PY2015.

In this section, we describe the *outcomes* of these efforts by the end of PY2014. In Chapter 4 (which focuses on how payers and others work together for CPC), we describe payers' *processes* to align reporting.

In PY2014, payers in Arkansas, Ohio/Kentucky, and Oregon produced aligned reports for practices (Table 3.5). Payers in each region agreed to report on a common set of cost and service utilization measures; however, only payers in Arkansas aligned the specifications for those measures to ensure they were calculated in the same way. In September 2014, Arkansas's four payers started uniformly calculating and reporting to practices on three measures. At least two of the four payers also began uniformly calculating and reporting on 10 other measures. Arkansas payers indicated that aligning measure specifications made the reports more useful but noted that doing so was time and resource intensive. Moreover, although payers in these three regions agreed to a set of common measures, only Oregon payers use an aligned report format, in which each payer's feedback report to practices follows the same general structure and order in presenting measures.

Table 3.5. Content and structure of aligned feedback reports in Arkansas, Ohio/Kentucky, and Oregon

Region	Start date	Frequency	Type of measures included	Common set of measures	Measures specifications aligned	Report format aligned	Patient-level data
Arkansas	Fall 2014	Quarterly	Cost and utilization	Yes	Yes	No	Yes, beginning in PY2015
Ohio/ Kentucky	Spring 2014	Quarterly	Cost and utilization	Yes	No	No	No
Oregon	Spring 2014	Quarterly	Cost and utilization	Yes	No	Yes	No

Source: Mathematica interviews with CPC payers in summer and fall 2014.

In all three regions, payers questioned the usefulness of aligned reports. Several payers in Ohio/Kentucky indicated that payers release their aligned reports on different timetables and through different portal systems, making it challenging for practices to keep track of reports. In Arkansas and Oregon, payers suggested that, without patient-level data, the reports are not actionable for practices. Moreover, payers in Arkansas indicated that practices may find it difficult to navigate reports because their format is not aligned.

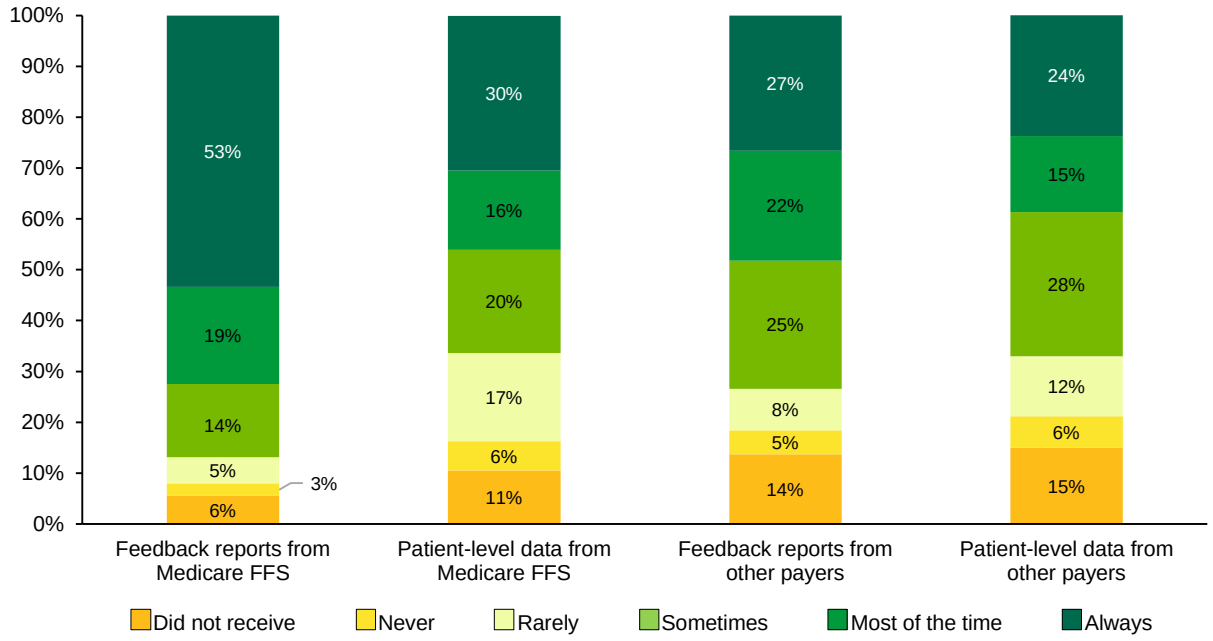
In light of these limitations, some payers continue to supplement aligned reports with individual reports that provide additional measures or patient-level data. Payers in Arkansas are also planning to start providing aligned patient-level data in PY2015 and may work to align the format of their common reports.

3.3.2. Practices value data feedback, although their use of such feedback varies across regions and depends on the report

Most practices or their larger health care organization frequently review practice-level Medicare FFS feedback reports. During the first two years of the initiative, the percentage of practices or their larger health care organization downloading the October Medicare FFS feedback reports (covering the period from April through June) within three months of their release increased from 68 percent for 2013 to 86 percent for 2014. Maintaining a similar level of use, 84 percent of practices downloaded their January 2015 report (covering the period from July through September 2014). In addition, in the 2014 CPC practice survey, most practices reported that they reviewed practice-level Medicare FFS feedback reports with some frequency (92 percent); about half of practices indicated they always reviewed the reports (53 percent), and 19 percent reported that they reviewed the reports most of the time (Figure 3.7).

Practices were less likely to frequently review patient-level feedback. Although 84 percent of practices reported they reviewed Medicare FFS patient-level data files with some frequency, only 30 percent reported that they always did so. Moreover, 11 percent of practices were unaware that these data files were available to their practice. Similarly, although most practices reported reviewing feedback reports (82 percent) and patient-level data files (79 percent) from other payers, only about a quarter of practices indicated they always reviewed these reports or data files. CMS and its learning contractor worked with practices during PY2014 to educate them on the existence of various reports and help them understand how to use them.

Figure 3.7. How often practices report reviewing feedback reports and patient-level data files from CMS and other participating payers



Source: CPC practice survey, administered between April and July 2014.

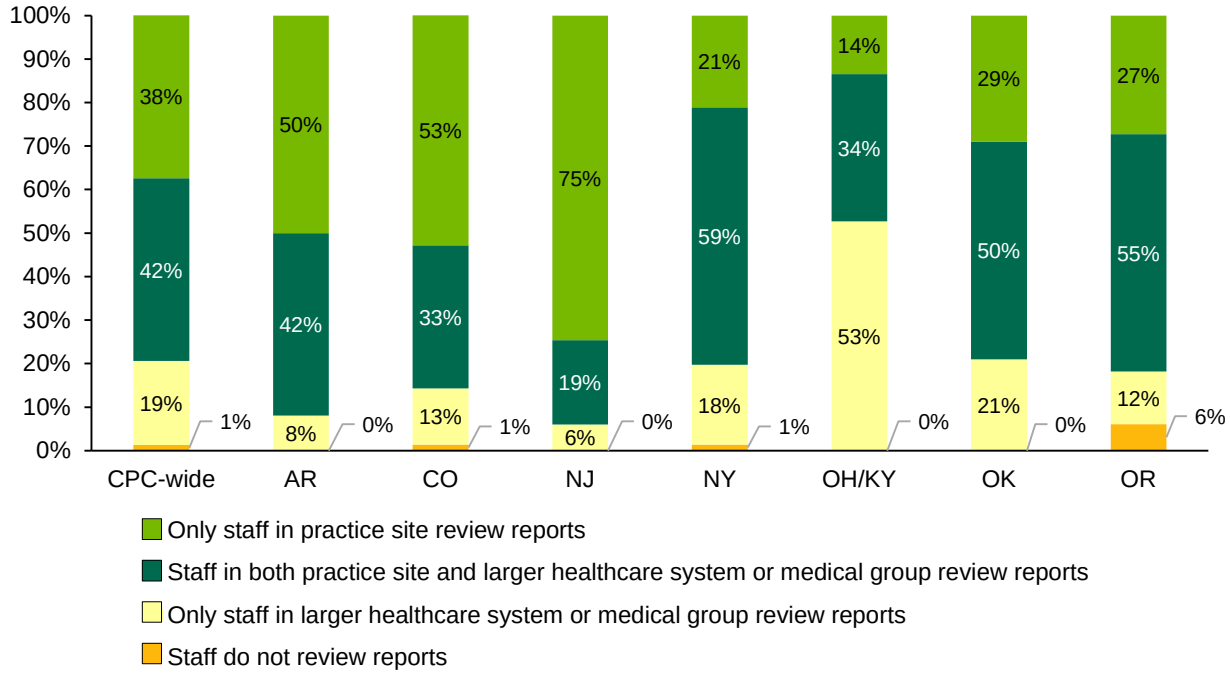
Note: A response of "did not receive" could mean either that the resource was not available or that the respondent was unaware of the resource. Although other payers varied in whether they provided feedback reports and patient-level data, the Medicare feedback reports and data were available during this time; therefore, a "did not receive" response for Medicare feedback reports and data indicates a lack of awareness.

Most practices indicated that practice-level staff review feedback reports. Across all CPC regions, 80 percent of practices indicated in the 2014 practice survey that a practice-level staff member reviews feedback reports either as the sole reviewer (38 percent) or with staff at their health system or medical group (42 percent) (Figure 3.8).

CMS staff and other stakeholders, including RLF, indicated that practices can also benefit from health system or medical group staff's reviews of reports. Such staff may have additional time, resources, and analytic capacity to help practice-level staff digest and use the information. In all regions except New Jersey, between one-third and one-half of practices reported that both practice- and health system-level staff are reviewing feedback reports. In New Jersey—which has a large proportion of small and independent practices and few practices associated with a larger health care system or medical group—only 19 percent of practices reported this collaborative reviewing process, while 75 percent of practices reported that practice-level staff review reports.

Across all CPC practices, 19 percent reported that CPC data feedback reports and files are only downloaded and reviewed by someone at the practice's larger organization; in these cases, the information is not being shared with practice staff to support their informed decision making to improve quality of care, as intended by CMS. This is particularly true in the Ohio/Kentucky region, where 53 percent of practices indicated reports are viewed at the health system level, and not by individual practice staff.

Figure 3.8. Percentage of practices reporting whether CMS's and other participating payers' feedback reports and patient-level data files are reviewed and by whom, CPC-wide and by region



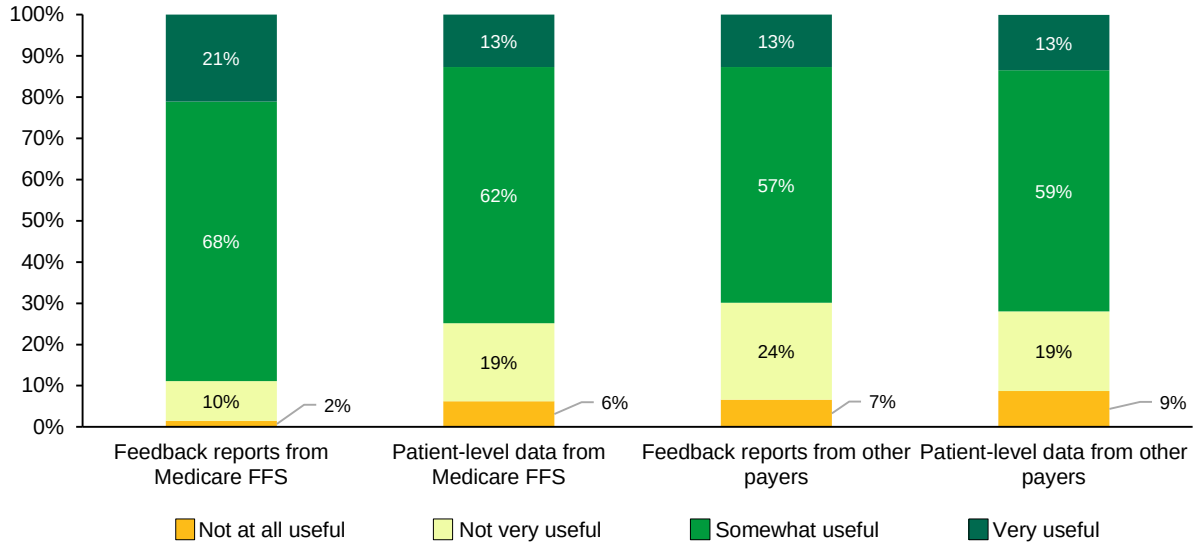
Source: CPC practice survey, administered between April and July 2014.

Notes: Differences in the proportion of practices in a region that are part of a larger health care system or medical group (as opposed to independent) explains, in part, regional variation in who reviews reports. Some columns do not add up to 100 percent due to rounding.

Although most practices reported that a representative from their practices or larger health care organization (if applicable) reviews reports, practice staff said that data feedback is not always disseminated within a practice. When the clinician survey was fielded in spring 2013, each CPC practice had received at least two rounds of Medicare FFS feedback reports. However, nearly two-thirds of CPC clinicians (64 percent) reported receiving no feedback from Medicare on patient experience, quality, utilization, or cost in the prior 12 months. We will use the next round of the clinician survey to assess the degree to which feedback report dissemination within practices has changed since early in the initiative.

A discrepancy exists between the proportion of practices that indicated reports are useful and the proportion that actually review them most or all of the time. In the 2014 CPC practice survey (fielded April through July 2014), nearly 90 percent of practices reported that they found Medicare FFS reports were somewhat or very useful in helping them meet the CPC Milestones and improve primary care provided at the practice (Figure 3.9). Most practices also valued other participating payers' reports; more than 70 percent of practices indicated that they found this other data feedback (including other payer feedback reports and patient-level data files) somewhat or very useful. The discrepancy between perceived usefulness and actual use suggests that practices may lack time, resources, or knowledge needed to use available data feedback or may not find it useful to review reports as frequently as they receive them.

Figure 3.9. Practices' reported usefulness of CMS's and other participating payers' feedback reports for meeting CPC Milestones and improving primary care



Source: CPC practice survey, administered between April and July 2014.
Note: Some columns do not add up to 100 percent due to rounding.

The percentage of practices reviewing reports varied widely across regions (Table 3.6). New Jersey and New York stood out as regions with a high proportion of practices reporting that they frequently reviewed feedback reports and patient-level data files from Medicare, as well as other payers, and valued them. As expected, regional differences exist in how practices view and use non-Medicare feedback reports. This is not surprising, given the wide variation in report availability and content across payers. For example, interviews with RLF, practices, and payers in New Jersey suggest that patient-level data files provided to practices by a large payer in the region for the past several years are particularly useful for identifying gaps in care, as well as high-cost specialists. Correspondingly, a relatively large proportion of New Jersey practices (63 percent) reported frequently reviewing other payers' patient-level data files.

Table 3.6. Practices' use of, and views on, feedback reports and patient-level data files, by region

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Percentage of practices that report receiving and reviewing reports most or all of the time								
Medicare FFS feedback reports	73	73	79	79	81	70	63	61
Medicare FFS patient-level data files	46	33	47	55	66	36	34	49
Other payer feedback reports	48	30	49	59	70	38	34	53
Other payer patient-level data files	39	18	31	63	61	34	23	37
Percentage of practices that find reports very or somewhat useful for improving primary care								
Medicare FFS feedback reports	89	86	88	91	98	93	95	74
Medicare FFS patient-level data files	75	68	60	77	95	75	87	67
Other payer feedback reports	70	42	72	86	93	69	74	53
Other payer patient-level data files	72	54	60	87	97	78	84	47

Source: CPC practice survey, administered between April and July 2014.

FFS = fee-for-service.

Practices also differ in their review and use of Medicare FFS feedback reports and data files—which are the same in every region. For example, two-thirds of practices in New York report reviewing Medicare FFS patient-level data files all or most of the time, compared to about a third of practices in Arkansas, Ohio/Kentucky, and Oklahoma. This suggests that other regional variations—such as levels of health system ownership, analytic capabilities, and support from RLF—may contribute to regional variation in report use.

Our interviews conducted with 21 deep-dive practices in summer and fall 2014 provide further insight into factors that contribute to practices' use of Medicare FFS and other payer feedback reports, as described next.

Some deep-dive practices found the quarterly Medicare FFS data feedback reports and patient-level data files useful for giving direction to quality improvement efforts and identifying areas where they may be able to reduce costs. Some respondents described regularly engaging in quality improvement efforts and noted the usefulness of the information in the reports (such as hospital readmissions, ED utilization rates, and costs) for driving those efforts. They also noted the usefulness of having access to both practice- and patient-level indicators. A few practices discussed reviewing the reports regularly to identify trends and compare their performance to that of other practices. One practice noted that, based on the information in the reports, it had reduced some of its referrals to laboratory services.

> "[The report] leaves it up to us to try to figure out how to study that [the cause of high costs]. So it gives you an aerial view of what is going on but does not help you know where to attack the problem."
>
> *—Physician, system-owned practice*

On the other hand, many deep-dive practices also indicated the Medicare FFS data feedback reports lack actionable information from which to draw conclusions. Some practice leadership described the Medicare FFS reports as

complicated and did not know how to reconcile the costs being reported with the clinical issues they face in their practice. Moreover, practices noted that the feedback reports do not differentiate between unnecessary and appropriate costs for care consistent with standards of care. Practices also indicated that the Medicare FFS reports would be more helpful if they were provided sooner. Even though CMS also provides practices with patient-level data on attributed Medicare FFS patients (in addition to the feedback reports themselves), several respondents at both system-owned and physician-owned practices said they did not know this patient-level information was available. A few practices indicated that information provided by their larger systems or other payers on which patients had not received diagnostic testing, such as mammograms and colonoscopies, was more useful than the patient-level data provided by Medicare FFS.

Some deep-dive practices believed non-CMS payers' reports are useful; others did not. Several care managers in deep-dive practices described integrating multiple payers' lists of patients overdue for screening tests or other evidence-based services, such as mammograms or diabetic monitoring, into workflows to alert clinicians when patients are due for certain tests. Several practice leaders, however, expressed frustration with, and concerns about, the accuracy and timeliness of the non-CMS payer data and gave examples of payers not being able to explain the reports when questioned about them. Practice staff also were frustrated by the lack of alignment across payer reports. Practice leaders believed payers should work with practices to ensure the reports are aligned and the data are accurate and actionable.

A few deep-dive practices found it challenging to dedicate staff resources to interpret the information in the feedback reports and to develop actionable work plans. This was due in part to the perceived vast amount of information in the reports, lack of detail in reports, and lack of patient-level data from all payers, which made it hard for them to identify patients on whom they should target attention.

3.4. Learning activities provided to CPC practices

In addition to the PMPM payments, shared savings opportunities, and data feedback reports CMS and other payers provided to practices, CMS provided participating practices with learning support. CMS, working with TMF Health Quality Institute (TMF), the prime learning contractor, and its RLF subcontractors, developed a comprehensive learning infrastructure that incorporates group learning sessions, individualized practice coaching, and opportunities for peer-to-peer learning (Table 3.7).[32]

[32] RLF are organizations under contract to provide learning activities and assistance to practices in each of CPC's seven regions.

Table 3.7. Description of CPC learning activities

Learning activity	Description	Purpose
All-day in-person learning sessions	RLF host meetings in each region using an in-person format.	• Provide training on CPC Milestones that is tailored to regional needs and context • Highlight Milestone strategies used by practices • Encourage peer-to-peer learning and networking between practices
Web-based learning sessions		
National webinars	CMS and TMF host webinars for all CPC practices	• Educate providers on CPC requirements • Share information on CPC Milestones that are challenging across regions • Highlight exemplar practices to encourage cross-regional learning
Regional webinars	RLF host webinars for practices in their region	• Share information on CPC Milestones tailored to regional needs and context • Highlight Milestone strategies used by practices in the region
Action groups	TMF or RLF host cross-regional Milestone-focused webinars for practices on a quarterly basis and facilitate follow-up discussions online	• Support practices in their efforts regarding a particular Milestone • Promote sharing of best practices across regions • Provide interactive learning opportunities
EHR affinity groups	TMF or RLF host cross-regional conference calls with groups of practices that use the same EHR	• Facilitate EHR-related problem-solving across regions • Connect practices with vendor representatives to receive assistance
Office hour sessions (regional)	RLF host virtual office hour sessions for practices in their respective region	• Answer practice questions on CPC requirements or Milestones
Individualized practice coaching	RLF provide individualized assistance to practices one-on-one or in small groups as needed	• Provide practices with tailored learning support on Milestones
Leadership track meetings	RLF host quarterly web-based or in-person meetings with physician leaders and health system administrators	• Enhance networking across practices • Deliver training customized for leadership staff
CPC Collaboration Site	CMS, TMF, and RLF monitor the collaboration site and encourage its use	• Provide practices with access to training and technical assistance documents • Answer practice questions on CPC requirements and Milestones • Encourage peer-to-peer learning and networking between practices
CPC Weekly Roundup	Weekly email to CPC practices and other stakeholders	• Share timely information about upcoming CPC-wide learning activities • Provide reminders about upcoming deadlines (such as due dates for Milestone submission) • Provide "practice spotlights" that describe specific practices' approaches to CPC-related activities

Source: Review of documents outlining CMS's requirements for the CPC learning contractor and interviews with CMS staff.

EHR = electronic health record; RLF = regional learning faculty.

CMS designed CPC learning activities to help practices achieve CPC aims and meet CPC Milestone targets. In the second year of the initiative, CMS and its contractors continued to offer learning activities similar to those offered in PY2013, including all-day learning sessions, webinars, office hour sessions, and individualized practice coaching. In response to feedback from the practices during the first program year, however, they increasingly adjusted the style of these sessions to emphasize peer-to-peer learning instead of didactic instruction. CMS also introduced two cross-regional learning activities—action groups (web-based learning sessions focused on a particular Milestone) and EHR affinity groups—to allow practices to share their expertise with practices in other regions (see Box 3.2).

Box 3.2. Changes in CPC learning in 2014

- Addition of cross-regional action groups and EHR affinity groups in August 2014.
- National webinars declined in frequency, partially replaced by action groups.
- Webinars and all-day learning sessions increasingly emphasize peer-to-peer education; didactic learning activities are less common.

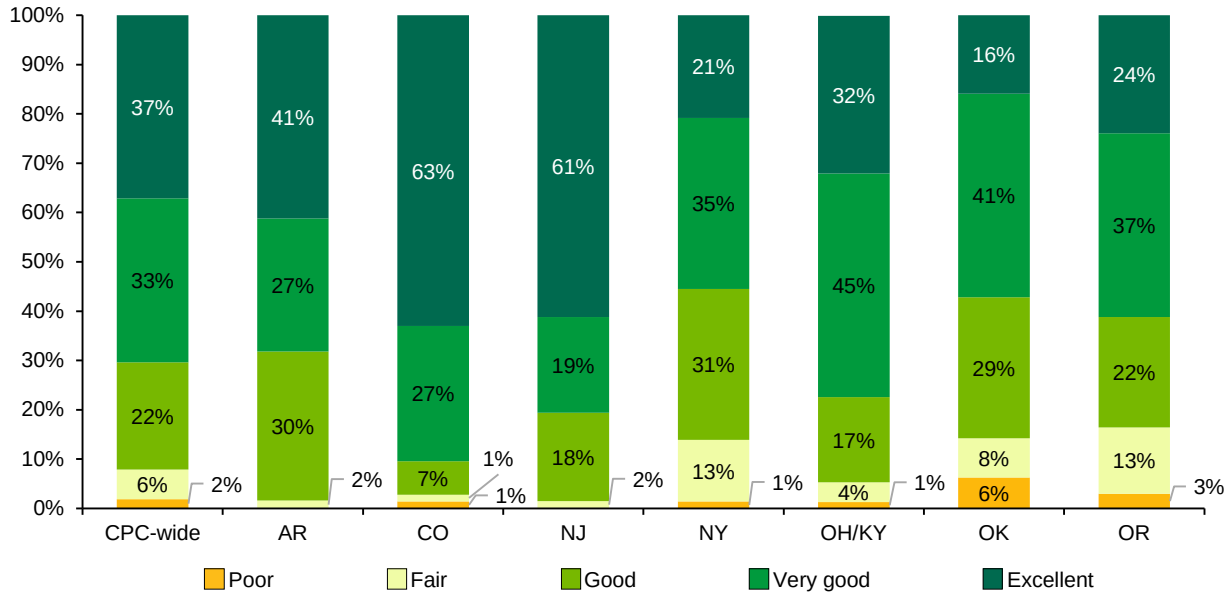
3.4.1. Practices are satisfied with the learning support provided through CPC

Most practices actively participated in CPC learning activities. Based on RLF assessments, most practices across the initiative met CPC requirements for participating in national and regional learning activities. To satisfy CMS's requirements for participating in learning activities for PY2014, practices were required to (1) attend each all-day learning session, (2) regularly attend national and regional web-based learning activities, (3) regularly attend the action group associated with their chosen advanced primary care management strategy, and (4) use the CPC collaboration site.[33]

In general, practices are satisfied with the learning support they receive, although some would like additional assistance. Deep-dive practices in several regions indicated that CPC learning support better met their needs in PY2014 by becoming significantly more tailored and specific than during the first program year. In the 2014 CPC practice survey, at least 56 percent of practices in every region said their RLF provided excellent or very good quality services in meeting their CPC-related needs (Figure 3.10). In particular, practices in Colorado and New Jersey reported a very high quality of services; at least 80 percent of practices in each region rated the quality of services as very good or excellent. RLF organizations in Colorado and New Jersey had worked closely with many CPC practices before CPC.

[33] Practices could use the collaboration site to engage faculty, share resources, or participate in forum discussions.

Figure 3.10. Percentage of practices rating their RLF as excellent, very good, good, fair, or poor in meeting their CPC-related needs



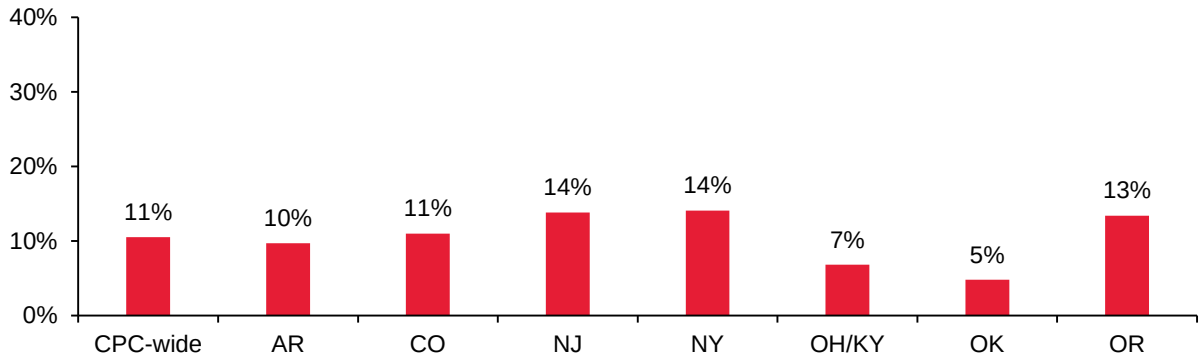
Source: CPC practice survey, administered between April and July 2014.

Note: Some columns do not add up to 100 percent due to rounding. Practices in New Jersey were asked to rate the New Jersey Academy of Family Physicians, because it provides support to all but two New Jersey practices. (These two practices are supported by TransforMED.)

RLF = regional learning faculty.

In addition, few practices in each region (less than 15 percent) reported that they would like additional assistance from their RLF (Figure 3.11). In Ohio/Kentucky and Oklahoma, the share of practices interested in additional RLF support is particularly low (7 and 5 percent, respectively), perhaps because many of the practices in these regions are system-owned and may therefore have ready access to system-provided sources of support. Moreover, the extensive support provided by Oklahoma payers through the field service team (described below) may also partially explain this result.

Figure 3.11. Percentage of practices that would like additional assistance from RLF



Source: CPC practice survey, administered between April and July 2014.
RLF = regional learning faculty.

Most payers are convinced of the value of learning support for the practices and were pleased with the quality of the learning activities that practices received. Payers in nearly all regions indicated the learning activities added value to the initiative and perceived all-day learning sessions and practice coaching to be the most beneficial types of activities for practices. Moreover, payers in some regions emphasized that individualized practice coaching has been critical for the initiative and that webinars alone would not have provided practices with the level of support necessary to transform. In the first year of the initiative, some Oklahoma payers thought the learning support their RLF provided was not sufficiently concrete and actionable, but many of these payers felt that learning activities had become more valuable.

> "... One of the keys [to CPC] was having an outside [RLF] organization be available to the practices. I think if I look back in 2020 and can say that CPC was successful and really made a difference [then] … having a[n] [RLF organization] in that role was critical. That's something that CMS did right."
>
> *—Arkansas payer*

3.4.2. All-day learning sessions give practices a valued opportunity for peer networking

In all regions, RLF hosted three all-day learning sessions in 2014 (Box 3.3).[34] All three sessions were held in person in each region. This was in contrast to CPC's first program year, in which CMS had required that one learning session be held virtually (or using a hybrid virtual/in-person format) due to government travel restrictions.

Box 3.3. CPC all-day learning sessions

- RLF held three all-day learning sessions in each region.
- Ninety-six percent or more of practices attended these sessions.
- Practices valued these opportunities for peer networking.
- Payers generally have positive opinions of all-day learning sessions.

During the all-day learning sessions, RLF used such strategies as didactic modules on key Milestones, presentations by practices, panel

[34] HealthTeamWorks and Rocky Mountain Health Plans hosted the first two Colorado learning sessions separately for practices in the Front Range and Western Slope, respectively.

discussions with patients, and practice networking (including breakout groups of practices focusing on a particular Milestone). RLF in each region also offered a "leadership track," through which they provided separate meetings for clinician leaders and health system administrators to discuss topics customized for leadership staff, such as managing change fatigue in their practices.

Payer engagement in all-day learning sessions varies by region. In several regions, particularly in Arkansas and Oklahoma, payers were deeply engaged in the planning for the all-day learning sessions and worked closely with RLF to craft meeting agendas. In addition, in some regions, including New Jersey and Ohio/Kentucky, payers participated as presenters in all-day learning sessions. Payers in other regions, notably Colorado and New York, were involved in these meetings to a much lesser extent, with only some payers attending some of the sessions. Across regions, payers highlighted the value of these meetings for improving payer-provider relationships by enhancing communication between the two groups.

All-day learning sessions were well received and well attended. In general, deep-dive practices and payers perceived the all-day learning sessions to be valuable. Deep-dive practices found networking with other practices, a key element of all-day learning sessions, to be the most beneficial aspect of the learning community provided by CPC. They indicated that communicating with other practices helped them identify tools, resources, and strategies to further practice transformation. Similarly, payers generally had very positive opinions of the all-day learning sessions, noting in particular that they facilitated practice-to-practice sharing. Nearly all practices had representatives attend the regional all-day learning sessions, as required under the CPC terms and conditions. Average participation in learning sessions was 96 percent or more of practices in each region.

> "[The learning activities] created a vehicle to create better dialogue between payers and providers. The learning collaboratives are a big portion of that. We've brought providers to the table and brought them into conversations. It's creating a …different respect on the part of payers for providers …and it's causing some of those providers to be not as skeptical about payers."
>
> *—Colorado payer*

Although most deep-dive practices recognized the overall value of learning sessions, some found the logistics of participation challenging. As in the first year of CPC, some deep-dive practices observed that spending a full day away from the practice to attend an all-day learning session was burdensome. This issue was especially severe for rural practices, which often faced significant travel time to attend an all-day learning session in person. Physicians in several deep-dive practices likewise noted that the value of attending an all-day learning session (which are held during the work week) was not sufficiently high as to warrant the required time away from patient care.

3.4.3. Web-based learning sessions were less didactic and provided more opportunities for practices to share best practices and learn from each other during PY2014 than during PY2013

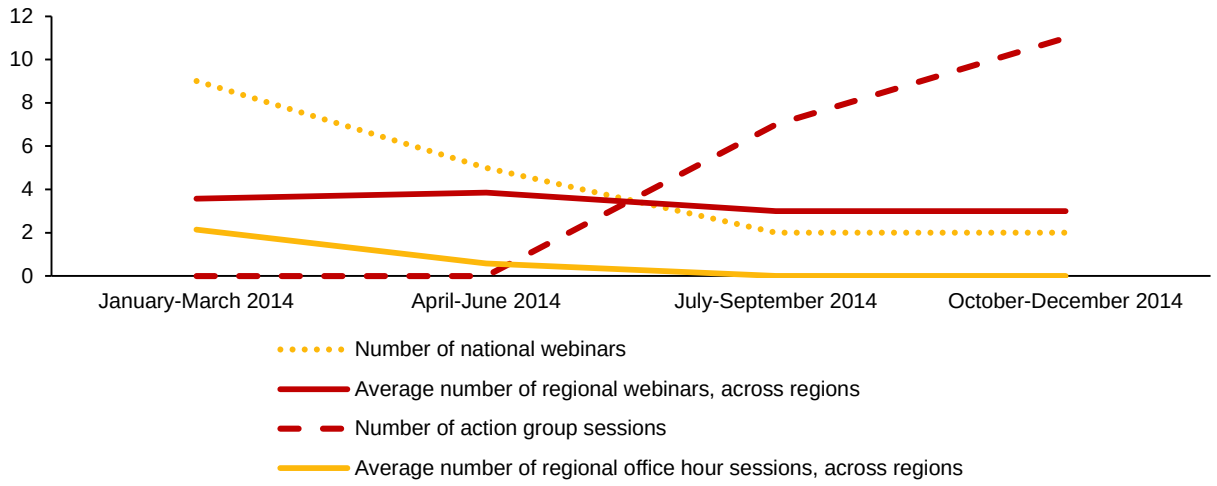
CMS indicated that, during the first year of the program, CPC learning activities focused largely on explaining the model and the requirements for practices. In the second program year, CMS focused more on helping practices adopt new strategies and approaches to achieving CPC's aims. In accordance with this shift and in response to practice feedback, CMS and RLF aimed to make national and regional web-based learning more interactive and less didactic. In addition, in

August 2014, CMS introduced two new types of cross-regional learning activities: (1) action groups, and (2) EHR affinity groups. These learning activities largely replaced national webinars (Figure 3.12) and are intended to allow practices to share best practices with peers initiative-wide and solve problems together. Several virtual learning opportunities was available to CPC practices in PY2014:

- **National webinars.** CMS and TMF hosted 14 national webinars, which covered programmatic topics (including the CPC Shared Savings Methodology) and Milestones viewed as challenging across the regions (including the three Milestone 2 advanced primary care strategies). Milestone-related webinars usually featured presentations by several CPC practices, which allowed practices to learn directly from their peers. CMS also hosted one optional miniseries on disparities in the provision of health care, prepared by the Robert Wood Johnson Foundation, which focused on the opportunities of Milestone-related efforts for reducing disparities among patients.
- **Regional web-based learning.** In contrast to PY2013, when there was considerable diversity across regions in the number of web-based regional learning activities and in the balance between webinar and office hour sessions, in PY2014, RLF provided similar offerings (see Figure 3.13). In the last two quarters of 2014, each RLF held six webinars in its region, and no RLF hosted an office hour session. The number of webinars and office hour sessions varied slightly more in the first half of 2014, but the quantity and types of web-based learning were similar across regions. The content and format for these webinars and office hours can be summarized as follows:
  - **Regional webinars.** TMF and RLF hosted webinars on Milestone topics that practices in a given region found challenging—most commonly, risk stratification and care management, patient engagement, using data to guide improvement, coordination across the medical neighborhood, and shared decision making. Like the national webinars, regional webinars have moved from primarily didactic, faculty-led sessions to meetings in which one or more practices share their experiences.
  - **Regional office hours.** These sessions are intended to be interactive and allow practices to directly engage with CMS staff or their RLF. The transition to more interactive webinars and the introduction of action groups may have made these sessions less necessary over the course of PY2014. Although formal office hour sessions were no longer offered during the final months of the year, practices could still contact their RLF if they had a question or concern.
- **Action groups.** New in PY2014, action groups are online communities of practices organized around Milestone topics, and they include groups for each of the three advanced primary care management strategies (Milestone 2), as well as for access (Milestone 3), patient experience of care (Milestone 4), the medical neighborhood (Milestone 6), and shared decision making (Milestone 7). Each action group holds web-based meetings at least quarterly and hosts ongoing online discussion through collaboration site forums, moderated by RLF. Web-based meetings typically include presentations from one or more CPC practices, “peer faculty” who respond to questions or comments submitted through web chat, and dedicated time for attendees to ask questions of the practice panelists. Each practice is required to regularly participate in the action group associated with the Milestone 2 strategy it has selected, but all other action groups are optional.

- **EHR affinity groups.** EHR affinity groups, another learning activity new in PY2014, provide a problem-solving forum for practices that use the same EHR. Practices may participate in these groups through discussion forums on the collaboration site or through approximately quarterly web-based meetings. EHR vendors participate in some affinity groups to answer questions and offer suggestions. These meetings are practice driven; RLF encourage practices to share "workarounds" and best practices but do not prepare a formal presentation for the session. Participation in EHR affinity groups is optional. There are 12 different EHR affinity groups, reflecting the large number of EHR systems used across CPC practices; the affinity groups for EPIC, NextGen, Allscripts, and eClinicalworks typically have the highest attendance, reflecting their relatively common use by CPC practices.[35] During most EHR affinity group meetings, practices ask questions, raise challenges, and share suggestions in open discussions facilitated by an RLF moderator. Common topics include electronic clinical quality measure (eCQM) reporting, EHR tools to track hospital admissions and discharges, and documentation of shared decision making. Since CMS's introduction of EHR affinity groups, EHR vendor representatives have gradually begun to participate in these sessions; by 2015, most EHR affinity groups regularly included an EHR vendor representative.

Figure 3.12. Change in number and modality of CPC national and regional web-based learning, January through December 2014



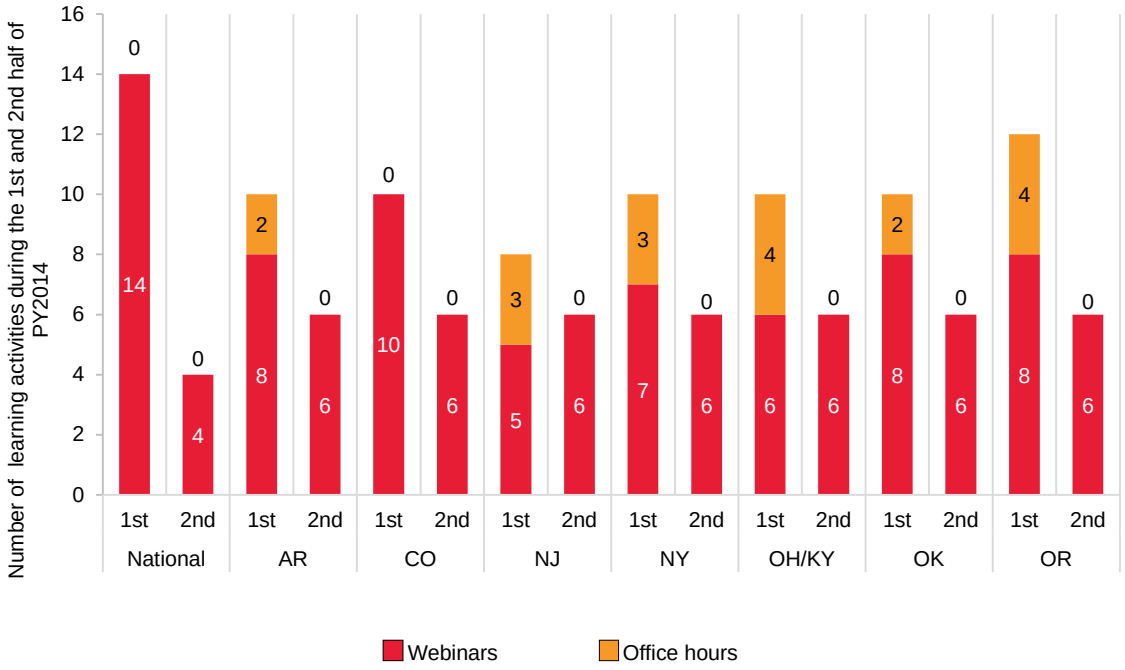
Source: TMF Health Quality Institute, Webinar Summary Report, January–July 2014; TMF Health Quality Institute, CPC Semi-Annual Progress Report, July–December 2014 (report dated January 30, 2015).

Notes: Number of RLF-hosted webinars are averaged across the seven regions. The topics covered and the structure of web-based learning varied. The number of activities does not indicate the quality of learning opportunities in a region. New Jersey's and Oklahoma's preparation meetings for the third learning session, which were held as webinars in the second quarter of 2014, are excluded from these counts. One webinar, jointly hosted in the second quarter of 2014 by Colorado and New York RLF for practices in their regions, is counted separately for each region.

RLF = regional learning faculty.

[35] Due to the timing of our deep-dive interviews (which were concluding just as EHR affinity groups were beginning in August 2014), we do not yet have direct practice feedback on the EHR affinity groups.

Figure 3.13. Number of national and regional webinars and office hours, for first half and second half of PY2014



Source: TMF Health Quality Institute, CPC Quarterly Report: Learning Activities, July–December 2013 (report dated January 10, 2014); TMF Health Quality Institute, Webinar Summary Report, January–July 2014; TMF Health Quality Institute, CPC Semi-Annual Progress Report, July–December 2014 (report dated January 30, 2015); RLF reports; and CPC collaboration site.

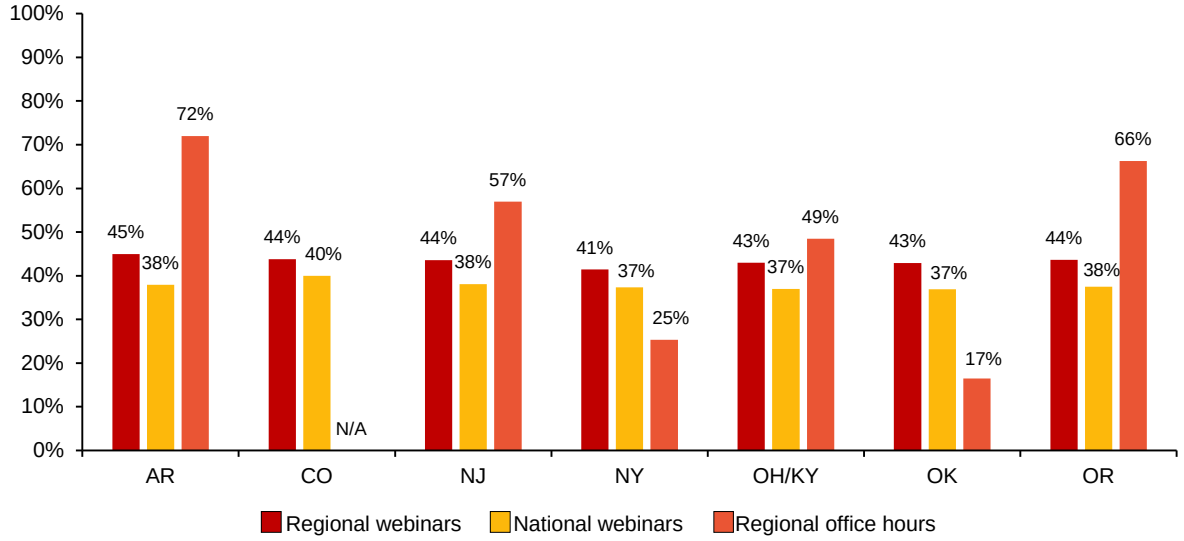
Note: New Jersey's and Oklahoma's preparation meetings for the third learning session, which were held as webinars in the second quarter of 2014, are excluded from these counts. One webinar, jointly hosted in the second quarter of 2014 by Colorado and New York RLF for practices in their regions, is counted separately for each region.

RLF = regional learning faculty.

Practices were slightly more likely to attend regional webinars than national webinars.[36] CMS required that practices participate in at least one webinar or office hour session each month in PY2014. CMS and RLF, between them, typically offered practices in each region two or more of these activities monthly, so practices often could select the activities that best fit their needs. In all regions, practices attended regional webinars at slightly higher rates, on average, than national webinars (Figure 3.14). Relative to both regional and national webinars, office hours were highly attended in Arkansas, New Jersey, and Ohio/Kentucky. In contrast, New York and Oklahoma practices were much more likely to attend a webinar than an office hour session.

[36] Comparable data on action group and EHR affinity group participation were not available for PY2014.

Figure 3.14. Average percentage of practices that participated in national webinars, regional webinars, and office hour sessions, January through December 2014



Source: TMF Health Quality Institute, Webinar Summary Report, January–July 2014; TMF Health Quality Institute, CPC Semi-Annual Progress Report, July–December 2014 (report dated January 30, 2015).

Notes: New Jersey's and Oklahoma's preparation meetings for the third learning session, which were held as webinars in the second quarter of 2014, are excluded from these counts. One webinar, jointly hosted in the second quarter of 2014 by Colorado and New York RLF for practices in their regions, is counted separately for each region. Colorado RLF did not host any office hour sessions.

RLF = regional learning faculty, N/A = not applicable.

Early feedback from practices on action groups has been positive. In action groups from August 2014 through the end of November 2014, at least 74 percent of practices at each meeting reported that the action group provided "clear, concise information" and was "valuable" for their practice. Among the approximately two-thirds of practices that responded to post-event surveys for December 2014 action groups, the majority of practices responding for each action group indicated that the session delivered "actionable follow-up steps," will "help [them to] achieve the CPC aims," "was a valuable use of … time," and "was engaging." Although practices, in general, viewed action groups positively, CMS staff indicated that RLF actively engaged practices in some action groups, whereas others relied more heavily on didactic presentations, limiting practice-to-practice interactions.

Some deep-dive practices would prefer fewer web-based learning sessions. Several deep-dive practices noted that the number of web-based learning sessions offered was overwhelming, and one respondent indicated that practices felt "webinared out." RLF observed that practices tired of discussing the same Milestone topics across multiple web-based learning sessions and suggested that allowing them to better tailor webinar content to their regions may help to alleviate some of the webinar burden some practices feel.

3.4.4. Individual practice coaching and facilitation varies across regions but is primarily used to help high-risk practices achieve difficult Milestones

In addition to providing for group learning activities, CMS allocated limited resources for RLF to provide coaching to individual practices—for example, making a site visit to discuss workflows or a telephone call with a practice care manager on risk stratification. To focus this practice coaching, RLF risk-stratify practices according to their expectations for meeting required Milestones. Most faculty report using both quarterly practice Milestone submissions and their own knowledge of the practices (such as practice culture or staff engagement) to categorize them according to risk and guide the intensity of their interactions. RLF in one region indicate that they also consider the practice's performance on cost, use, and quality metrics, as measured by their Medicare feedback report, in their risk stratification.

RLF structured their approach to practice coaching based on prior experience providing practice transformation assistance or to account for regional variation in practice characteristics (for example, average practice size and degree of system affiliation) and regional context (for example, rural/urban mix and health information technology [HIT] infrastructure). In this section, we discuss three key dimensions that characterize RLF practice coaching: content of interactions, intensity of interactions, and level of interaction (health system or practice).

a. Content of individual interactions between RLF and practices

In all regions, RLF are proactive, reaching out to practices to check in or offer suggestions, and reactive, responding to questions and concerns raised by practices. Many RLF emphasize their "just-in-time" response to practice-initiated contact, either via email, telephone call, or text message, as a critical aspect of their role. RLF in one region (who are rated highly by practices) noted that the majority of their practice support is "just-in-time" communication.

Practice coaching often focuses on risk stratification and care management, shared decision making, and using data to guide improvement. For example, practices frequently received coaching on implementing their selected Milestone 2 advanced primary care strategy, reporting eCQMs, and selecting an appropriate shared decision-making aid. Some deep-dive practices indicated that RLF review of plans for Milestone-related changes in practice processes (such as a new shared decision-making tool) and assistance with finding resources (such as care compact templates) were particularly valuable coaching activities.

> "I set up a communication plan with each practice and they can text me if they have a sticky spot. I will return their text in an hour or so. If they have a question they can call me and I will respond that day. If it's an email, I'm busy from 9 to 5, so those wait until the end of the day for a response. They know it's next day for emails."
>
> *—CPC RLF*

RLF report providing direct coaching on quality and efficiency measures, including the measures in the quarterly practice-level Medicare feedback report. One of the Colorado RLF requests that practices report their eCQMs quarterly so that facilitators can use these data during individual monthly meetings with practices. In addition, Ohio/Kentucky RLF have a staff member who focuses on data analytics and who meets with practices to present practice- and system-level data. Arkansas and Oklahoma RLF focus on helping practices use their Medicare FFS feedback reports. Arkansas RLF, for example, report helping practices identify patients

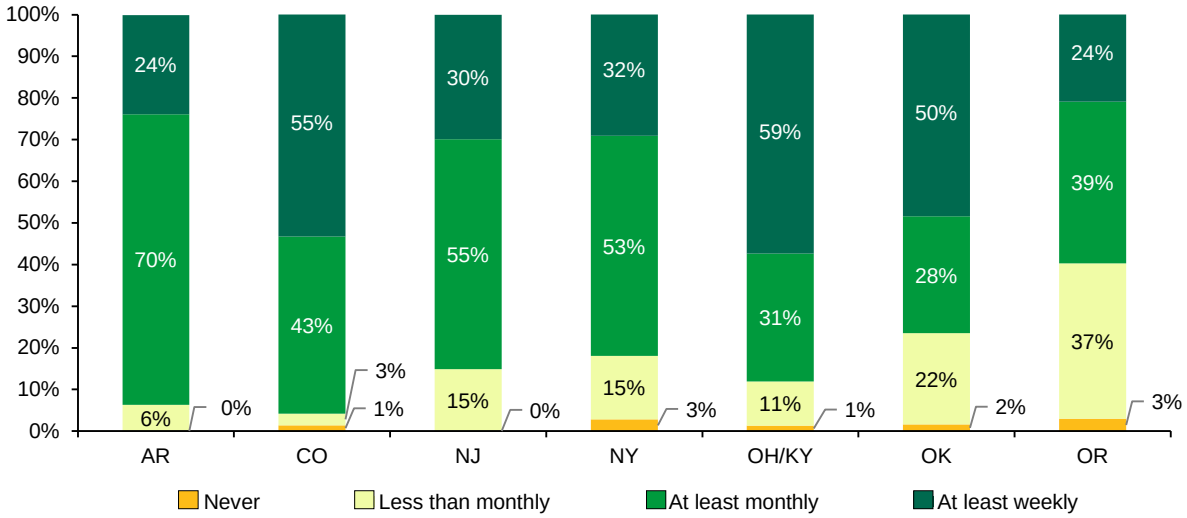
affecting the practice's performance on ambulatory care sensitive admission measures. Although New Jersey and Oregon RLF do not typically work through the reports with practices, they encourage practices to review their Medicare FFS feedback reports and provide general training on the use of data. In Oklahoma, RLF have worked with MyHealth, the local health information exchange, to provide practices with unblinded data on the performance of their peers on Medicare FFS feedback report metrics. Similar work is under way in other regions, including Ohio/Kentucky.

Many interactions between RLF and practices focus on CPC administrative items. RLF frequently communicate with practices to send reminders about CPC deadlines, prepare materials for practice presentations on webinars or action groups, follow up on uncompleted surveys, and clarify Milestone requirements. According to some faculty, there is a trade-off between these activities and content-focused practice coaching. RLF in one region explained, "It took one of my practice facilitators six hours, 17 phone calls, and we didn't even count the emails, just to find a practice [to present on a webinar]. Nearly a whole day for one facilitator to track down a practice that would agree to present. We could have done a lot more with six hours—we could have probably done a site visit in six hours!"

b. Intensity of interaction between RLF and practices

The intensity and type of individual practice coaching varies by region and RLF-assigned practice risk category. Most practices in each region reported communicating with their RLF at least monthly or weekly through meetings at the practice site, coaching (in person, over the telephone, or via email), or other direct assistance over the six months before responding to the 2014 CPC survey (Figure 3.15). However, the percentages varied widely across regions. For example, a higher proportion of practices in three regions—Colorado, Ohio/Kentucky, and Oklahoma—reported weekly contact with their RLF (55, 59, and 50 percent, respectively) than did practices in the remaining four regions. Across all regions, RLF report that low-risk practices tend to receive mostly check-in telephone calls or emails; Colorado and Oklahoma are the only regions in which low-risk practices receive regular site visits. In all regions, high-risk practices are more likely than other practices to receive site visits, and moderate-risk practices are more likely than low-risk practices to receive frequent email and telephone contact.

Figure 3.15. Frequency of reported communication with RLF in previous six months, by region



Source: CPC practice survey, administered between April and July 2014.

Note: Some columns do not add up to 100 percent due to rounding.

RLF = regional learning faculty.

RLF in most regions remarked that resource constraints affect practice coaching intensity. RLF in multiple regions would like to have the resources to do additional site visits. For example, one explained, "We get a better feel for the practice and what the practice needs [in a site visit]; we feel it and can physically touch it." Regions with narrower geographic boundaries, including Ohio/Kentucky and Oklahoma, or regions such as Colorado, where facilitators are spread throughout the state, are less affected by this barrier. In these regions, in-person visits are less cost-prohibitive, so RLF were able to provide more site visits to practices (Table 3.8). To efficiently use limited resources, RLF in New Jersey and Oregon—who work with practices on multiple initiatives—tried to use a single site visit to communicate with practices on both CPC and non-CPC issues.

Although RLF recognized that targeting their efforts toward high-risk practices is appropriate given limited resources, some RLF indicated that low-risk practices could benefit from support to implement strategies that go beyond basic CPC requirements. In one region, an RLF lead indicated that the initiative focuses heavily on high-risk practices, noting, "This initiative has relied heavily on high achieving practices to spread their wisdom to practices behind them. [The learning system is] not providing much value to high-achieving practices." Another faculty member observed, "Unfortunately, if [the practice is] chugging along, we have to dedicate our resources to those that are struggling….There was not enough funding or support built into the contract to provide [site visits] to all the practices. We have to judiciously identify who we can go see." Working with exemplar practices to prepare presentations for regional webinars and action groups may provide RLF with opportunities to coach these low-risk practices toward continued success.

Table 3.8. Frequency of RLF site visits and telephone calls, by region and practice risk

	Number of CPC practice coaches	Site visits and telephone calls, by practice risk		
		High-risk	Moderate-risk	Low-risk
AR	1.5	Quarterly site visits; monthly calls	Monthly calls	None
CO[a]	3 (HTW); 2 (RMHP)	Monthly site visits	Monthly site visits	Monthly site visits
NJ	1.5	Monthly site visits or calls	Monthly calls	None
NY	2	Frequent calls; site visits as needed	Calls as needed	Calls as needed
OH/KY	6	Twice monthly site visits or calls	Twice monthly site visits or calls	Calls or site visits as needed
OK	1.5	Monthly site visits; weekly calls	Monthly site visits; weekly calls	Quarterly site visits; calls as needed
OR	3	Monthly site visits	Quarterly site visits or calls	None

Source: Interviews with RLF conducted by Mathematica and Group Health Research Institute.

[a] HTW = HealthTeamWorks (serves Front Range region); RMHP = Rocky Mountain Health Plans (serves Western Slope region).

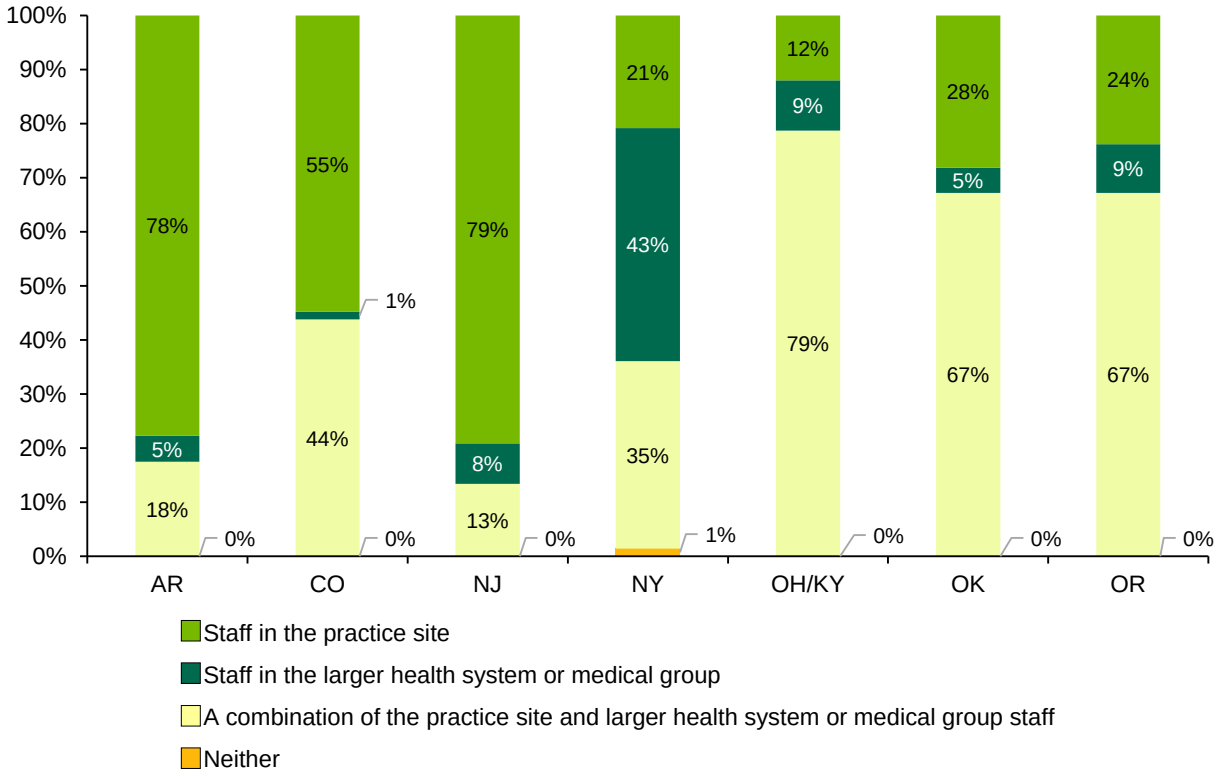
RLF = regional learning faculty.

In some regions, practices are reluctant to collaborate with their peers. Practice-to-practice sharing amplifies the learning support available to practices and can decrease the workload for RLF. However, practices in some regions are less amenable to practice collaboration than others. Arkansas and Colorado practices are reportedly very willing to share resources and information with their peers; RLF in these regions emphasized the value of this practice-to-practice sharing, noting that it allows practices to garner lessons from other practices that have faced similar challenges. Practice-to-practice sharing is less common in regions generally described as highly competitive provider markets, such as New Jersey and Ohio/Kentucky. In these regions, practices must instead rely on RLF to provide support for issues for which their peers may have developed promising solutions.

c. Level of interaction between practices or their larger health care organization and RLF

Most practices report that RLF communicate directly with practice-level staff. In all regions but New York, at least 90 percent of practices report that RLF work either solely with staff at the practice level or with a combination of staff in the practice and at the practice's larger health care organization (Figure 3.16). In contrast, 43 percent of the practices in New York report that RLF only interact with staff at their larger health system or medical group. Interactions between RLF and larger health care organization staff were least common in Arkansas and New Jersey, both of which have a relatively large number of small, physician-owned practices.

Figure 3.16. Percentage of practices reporting practice site-level or system-level communication with RLF



Source: Practice responses to 2014 CPC practice survey.
Note: Some columns do not add up to 100 percent due to rounding.
RLF = regional learning faculty.

RLF typically interact with system-owned practices through a single cross-site conference call or email message or through meetings at which all or most of the CPC practices in the organization or system are in attendance. Respondents in several regions observed that health care organizations often apply CPC processes consistently across all their CPC practices. Therefore, some health care organizations prefer that RLF work with all their practices as a group. Some RLF also noted that this approach can be more efficient, given limited resources available for individualized practice coaching.

> "We ran out of resources to be in every practice so we had to collaborate to be everywhere. We have a coach that goes into one system, and they gather all their folks, and she's there helping them with their reports, like a call center. It ends up being a collaborative effort."
>
> *—RLF in one CPC region*

3.4.5. Practices use the CPC collaboration site to discuss CPC Milestones, although usability challenges remain

The **CPC collaboration site,** an interactive website run by CMS, continues to be the electronic site through which practices share resources and participate in discussion forums. CPC practices can use the site to ask questions of CMS, their contractors, and other CPC practices about CPC requirements and Milestones. In addition, CMS and RLF post presentation materials,

CPC implementation guides, and other resources to the site library. Practices were required to share at least one document or experiential story on the site during PY2014. Action groups and EHR affinity groups also use the collaboration site between meetings to discuss Milestone-related topics or EHR challenges. For example, facilitators of the action group forums post practice "homework" before webinars or pose follow-up questions or resources from the webinars. In the last two quarters of 2014, forums dedicated to particular action groups, particularly those that focus on self-management support and behavioral health integration, hosted the majority of the forum discussion on the site. In the forums, widespread participation of practices was limited; however, practices that participated in discussion forums used them to seek out examples of tools and resources (such as care management templates or care plans) or to share their experiences and respond to the questions of facilitators and other participants.

CMS partially reorganized the CPC collaboration site in early PY2014 to make it easier for practices to find discussion forums and resources on a particular topic, and one RLF indicated that the site had improved. Other RLF, however, still report that locating documents on the site is challenging and that the site requires password changes too frequently. Some deep-dive practices also remarked that the site's email alerts about the availability of new resources were excessive.

3.4.6. Other payers provide additional learning activities to practices

As in the first year of CPC, a number of participating payers also provided their own support to practices in CPC's second year. Payer-provided assistance—either through CPC or as part of payers' other initiatives—augments support provided by RLF. Most often, payers provide technical assistance on their payer feedback reports and staff their own team of practice facilitators or care managers, who provide support to practices or patients as needed. Some payers also report discussing CPC-related topics with practices, in conjunction with their communication with the practice on the payer's other initiatives. A few payers also offer more extensive practice support, such as the following:

- One Arkansas payer is running a pilot program in which it provides practice transformation coaching to a small number of CPC (and non-CPC) practices.
- Two New Jersey payers host educational webinars, and one of them also provides coaches who support practices in practice transformation.
- One New York payer employs pharmacists and quality improvement coaches who discuss with practices opportunities for quality and efficiency improvements.
- Oregon practices have access to resources provided by the payer-funded Patient-Centered Primary Care Institute, which provides learning support, including webinars and training sessions, to providers.

In addition, in Oklahoma, non-CMS payers collaborated with RLF in CPC's first year to develop a field service team (see Taylor et al. 2015). Each payer has provided a point of contact who, supported by TransforMED, the region's RLF, provides individualized support to practices. As part of the field service team, one payer representative visits practices approximately quarterly and attends one health system's regular practice staff meetings.

4. HOW DO CPC PAYERS, PRACTICES, AND OTHER STAKEHOLDERS WORK TOGETHER?

CPC represents one of the largest and most substantial multipayer initiatives ever tested. CMS is collaborating with other payers to jointly promote comprehensive primary care through providing enhanced payment and aligning and coordinating data feedback for participating practices. (As noted in Chapter 3, learning activities are another support provided to participating practices, but payers' involvement in learning—and their desire for that involvement—varies considerably from region to region.) This work requires a tremendous amount of coordination and collaboration between participating stakeholders.

At the start of CPC, CMS and the participating payers in each region began meeting regularly to discuss the rollout of the CPC program and any issues or updates, practice learning activities, and strategies for aligning data feedback for practices; these meetings are called *multipayer* or *payer-only meetings.* Over time, CMS and other payers started to engage practices, consumers, and other stakeholders in forums, referred to as *multistakeholder meetings.* At this stage of CPC, payers in some regions are engaging other stakeholders in all their meetings related to CPC; in other regions, payers continue to hold some payer-only meetings to discuss CPC issues that are of interest only to payers or that are sensitive or not appropriate for the multistakeholder forum (for example, the process that payers will use to submit data to a data aggregator). In this chapter, we describe payer and other stakeholder collaboration during the second year of the initiative.[37]

4.1. Key takeaways on CPC payer and other stakeholder collaboration

- Most payers remain committed to CPC and actively engaged in meetings. Many payers are increasing their emphasis on CPC and other similar efforts focusing on primary care redesign and alternative payment approaches. However, a few payers with a low number of attributed patients in CPC show lower levels of engagement.
- Payers and practices participated in multistakeholder meetings in all regions. In some regions, CPC payers also engaged consumers, employers, and community groups (including universities and health foundations) in multistakeholder discussions. Although some payers value multistakeholder meetings highly, many reported that the meetings occurred more frequently than necessary or that those focused specifically on CPC were less useful than meetings focused more broadly on reform efforts in the state.
- Most payers continue to view CMS as a critical partner in efforts to transform primary care, recognizing its role in encouraging practice participation in transformation efforts and bringing additional financial and technical support to each region.

[37] CPC was included in a recent review of multipayer medical home initiatives. CMS and other CPC payers are capitalizing on many of the same benefits and experiencing many of the same challenges as participants in other multipayer programs (Takach et al. 2015).

- Payers also indicated that some aspects of working with a federal agency remain challenging (such as the delay in CMS's participation in data aggregation and the time needed for federal clearance before CPC's impact results are released), but many openly recognized the legal and other constraints under which CMS works. Payers suggested that, in the remaining years of CPC, CMS continue to improve communication and transparency with other payers and involve payers more actively in CPC decision making.
- CPC brought together a consortium of payers to support primary care transformation. Most CPC payers remain committed to primary care transformation and continue to work together closely for CPC. As a result, payers are providing aligned financial incentives to practices and, in all regions but New Jersey, took steps to develop a common approach to data feedback. However, challenges—including cost, competitive dynamics, and corporate priorities—have delayed or limited collaborative efforts in some regions.
- Payers are applying lessons learned from CPC to help shape other initiatives in CPC regions, most notably the design and implementation of State Innovation Models (SIM) awards. As a result, non-CPC primary care practices in some regions are encouraged to pursue Milestones or aims in line with CPC goals and receive payments, learning support, and data feedback similar to those of CPC practices.

4.2. Multipayer and multistakeholder meetings

In each region, CMS and the other participating payers continue to hold frequent meetings to discuss CPC (Table 4.1). The relative frequency of multipayer meetings and multistakeholder meetings varies by region. Multistakeholder faculty, which are funded by CMS through subcontracts with the prime learning contractor, regularly facilitated these meetings. During both types of meetings, payers commonly discussed CPC program updates, strategies for coordinating data feedback, common barriers to completing Milestones, and, with increasing frequency, strategies for sustaining primary care transformation after CPC ends. In addition to regular meetings, payers in most regions convened periodic work groups to accelerate progress in one or more of the following priority areas: data sharing, employer engagement, and learning support.

Since the start of the initiative, CMS has encouraged payers to engage practices and other stakeholders in CPC discussions. Payers in Arkansas, New York, and Ohio/Kentucky were quick to start working with stakeholders and held their first multistakeholder meetings within three months of the initiative's start. In New York and Ohio/Kentucky, payers found these meetings valuable and, by the end of the first program year, had stopped holding multipayer meetings. Payers indicated that the multistakeholder approach helped to break down silos, created a cohesive group, and encouraged active stakeholder participation. Some payers did note, however, that involving stakeholders in every aspect of these meetings (such as the selection of data aggregation vendors) can slow the decision-making process or misuse stakeholder time. In contrast to these two regions, payers in Arkansas indicated that multistakeholder meetings lacked a clear focus and dissolved their initial multistakeholder group in August 2013 due to low stakeholder engagement.

Payers in the remaining four regions expressed reservations about hosting frequent multistakeholder meetings for CPC. Their main concerns included overburdening providers, duplicating existing stakeholder efforts, defining the goal and scope of meetings, and identifying

the "right" participants (that is, those interested in ongoing participation and capable of making meaningful contributions to meetings). Several payers initially gathered stakeholder input on CPC through means such as periodic focus groups with providers or narrowly focused work group meetings (for example, to gain provider feedback on templates for standardized reports).

Table 4.1. CPC multipayer, multistakeholder, and work group meetings as of December 2014, by region

	Multipayer meetings[a]		Multistakeholder meetings		Work group meetings[b]		
	Frequency	When meetings ended	Frequency	When meetings began	Data sharing	Employer	Field service team[c]
AR	Monthly	n/a	Quarterly	April 2014[d]	X		
CO	Monthly	n/a	Quarterly	May 2014	X		
NJ	None	Summer 2014	Every other month	September 2014[e]			
NY	None	Fall 2012	Monthly	January 2013			
OH/KY	None	Fall 2013	Monthly	October 2012	X[f]	X	
OK	Monthly	n/a	Quarterly	February 2014	X		X
OR	None	Summer 2014	Every other month	May 2014	X		

Source: Agendas and notes from payer and multistakeholder meetings and information provided by multistakeholder faculty and CMS staff.

[a] In September 2014, CMS transitioned from supporting multipayer meetings to only supporting facilitation for multistakeholder meetings. Payers in Arkansas, Colorado, and Oklahoma continued to meet; CMS will no longer regularly attend.

[b] Work groups commonly met monthly but sometimes met more frequently during periods of intense activity (for example, when the region was designing reporting templates or reviewing applications for data aggregation vendors).

[c] In Oklahoma, non-CMS payers collaborate with RLF on a field team to provide additional learning support to CPC practices.

[d] Arkansas held multistakeholder meetings between November 2012 and August 2013. Payers dissolved their initial stakeholder group in September 2013 because of low stakeholder engagement. Payers reengaged stakeholders and began meeting again in April 2014.

[e] Payers in New Jersey held focus groups with providers in February and April 2014 before launching their stakeholder group in September 2014.

[f] Payers and practices in Ohio/Kentucky participated in (1) a data-sharing work group, which is working on data aggregation; and (2) a data-reporting work group, which worked to develop a standardized template and distribution timetable for individual payer reports.

n/a = not applicable; RLF = regional learning faculty.

Following continued encouragement by CMS, all payers eventually formed (and Arkansas re-formed) multistakeholder groups that meet at least quarterly. In all regions, some physician leaders from CPC practices participate in these meetings. A few regions also include consumers, employers, and community groups, such as health foundations and universities, in discussions (Table 4.2). In addition to updating stakeholders on the initiative, payers most commonly engaged stakeholders in discussions of sustainability, potential improvements to data feedback, and barriers to coordination between primary care providers and specialists and hospitals.

In September 2014, after all regions had started multistakeholder meetings, CMS transitioned from providing financial support for multipayer and multistakeholder meetings to doing so only for multistakeholder meetings. CMS indicated that it had limited resources to support regional meetings and thought that multistakeholder meetings were the most effective way to invest those resources. At that point, CMS also no longer committed to regularly

attending multipayer meetings but was fine with other payers continuing these meetings on their own if they wished.

Table 4.2. Stakeholders involved in CPC multistakeholder meetings

	CPC payers (including CMS)	Stakeholders involved			
		CPC providers	Consumers[a]	Employers	Other stakeholders
AR	X	X	X	X	AR Department of Health; health foundations; universities; pharmacists
CO	X	X			
NJ	X	X			
NY	X	X	X		Medicaid (not a participating payer)
OH/KY	X	X	X	X	
OK	X	X	X	X	
OR	X	X			

Source: Agendas and notes from payer and multistakeholder meetings and information provided by multistakeholder faculty and CMS staff.

[a] Consumers include patient representatives and consumer advocacy groups.

Payers in Arkansas, Colorado, and Oklahoma expressed frustration with CMS's decision to stop regularly attending and funding multipayer meetings. Payers in these regions decided to maintain frequent multipayer meetings to discuss complex issues that they think do not require stakeholder input (such as the process for payers to submit data to a data aggregator) and develop a shared vision for primary care transformation in their region. CMS occasionally joins these meetings or meets with payers individually.

4.3. Payer commitment and collaboration

Most payers continue to value the opportunity to collaborate with other payers. Payers in Arkansas, Colorado, Oklahoma, and Oregon indicated that they continue to work well together and have strong collaborative relationships, not just within CPC but also on other regional initiatives. Payers and multistakeholder faculty in these regions often characterized the payer dynamics as "cohesive," "collegial," and "constructive." Furthermore, payers described themselves and other payers in their regions as deeply committed to CPC, with each making fair, highly valued contributions to the initiative. For example, Oklahoma payers pointed to their joint contributions to CPC learning support through the field service team as evidence of strong, successful collaboration. As another example, Oregon payers observed that they frequently communicate outside the regular meetings "to keep each other in the loop" and to ensure that they "act as one" and "speak with one voice."

In New Jersey and New York, most payers reported that they continue to work well together but also indicated that several smaller or resource-constrained payers participate less actively than others. In New Jersey, one payer commands most of the market share, and two of the three other payers have few attributed patients in CPC. Payers noted that this market imbalance constrains full payer engagement in CPC. Similarly, in New York, two of the region's four payers are regarded as less engaged in CPC, one due to an anticipated decrease in the number of attributed CPC patients, and the other as a result of staffing cutbacks and competing priorities.

One New York respondent voiced concerns that these two payers have been pulling back on the overall staff resources they devote to CPC, as well as substituting junior staff for senior executives in CPC meetings.

Payers in Ohio/Kentucky remain committed to supporting practices through CPC, but the degree to which they are engaging and collaborating with each other varies widely across the nine participating payers. Some payers are actively collaborating to expand practice transformation efforts statewide; others have shown little interest in doing so. Several payers indicated that the region's intensely competitive insurance market makes some payers reluctant to share information with one another in multipayer meetings. As a result, payers started meeting individually with the region's multistakeholder faculty (in addition to meeting during multistakeholder meetings).

Across regions, payers and payer conveners made several observations regarding payer collaboration:

- In general, payers valued multistakeholder faculty, funded by CMS to facilitate meetings in the region. Payers indicated that multistakeholder faculty helped them work together (especially important in competitive payer markets), set goals, and remain focused on achieving those goals.
- In most regions, payers with a larger market share participate more actively in meetings than other payers and can sometimes drive decision making. For the most part, other payers felt this dynamic was fair because they had more "skin in the game," and smaller payers were willing to let them take the lead. In some cases, however, as a result of this, smaller payers eventually disengaged from CPC.
- National payers and regional payers often contributed different perspectives in payer meetings. In general, and not surprisingly, regional payers were more knowledgeable about the region and more likely to be involved in non-CPC initiatives in the region than national payers. As a result, regional payers often were more invested in aligning CPC with other regional initiatives than national payers, who often took a back seat during the discussions. National payers, in contrast, often were interested in standardizing their CPC approach across regions. As a result, some national payers were less interested in participating in regional data aggregation efforts. Although a few payers were concerned with this dynamic, most understood their colleagues' perspectives and did not feel the dynamic negatively affected CPC.

Relations between CMS and other payers have improved in some regions, but challenges remain. In general, New Jersey, New York, and Oklahoma payers are more satisfied with CMS's role than they were in PY2013, although several remain concerned that personnel changes at CMS might hinder CPC progress. However, most payers in Arkansas, Colorado, Ohio/Kentucky, and Oregon continued to describe their relationship with CMS as "bumpy." Payers made several observations regarding CMS's role as convener and fellow collaborator for CPC:

- **CMS as a catalyst of change.** Most payers continue to view CMS as an important driving force for the CPC initiative. Payers often indicated that CMS's presence encouraged broad payer and practice participation in CPC because Medicare covers a substantial portion of the patient panel for many primary care practices. Many payers also indicated that CMS's participation brings additional financial and technical support to the region.

> "The practice transformation that's taking place in our state, without the federal funding, would not be possible."
>
> *—Participating payer*

- **Shared goals across CMS and other payers, but limited collaborative decision making.** Many payers indicated that CMS and regional payers are working toward the same goals, and some noted that this shared vision encourages collaboration. Still, others remain surprised by CMS's "top-down directives" on the frequency and structure of multipayer and multistakeholder meetings, measurement, data aggregation, and Milestones. Payers understand the tension created by CMS's dual roles of convener and collaborator, but many indicated they would like to play a larger role in CPC decisions. Several payers thought that CMS's decision to no longer commit to regularly attending multipayer meetings—highly valued by many payers—downplayed the role of the other payers in the initiative.

> "Open communication and collaboration is critical. I think treating everyone as an equal partner and working through issues together is important."
>
> *—Participating payer*

- **Opportunities remain for CMS to build trust with payers.** In many regions, especially those with strong prior regional collaborations, CMS was viewed as "the new kid on the block" at the start of CPC. Payer representatives in several regions, most notably New Jersey, New York, and Oklahoma, indicated that they developed a close, transparent working relationship with their CMS counterparts during the first two years of the initiative. In contrast, some other payers feel their relationship with CMS has further deteriorated and "collaboration has stalled" due to (1) turnover in CMS personnel, (2) delayed or unclear communication between CMS and payers, and (3) CMS's decision to not financially support and regularly attend multipayer meetings.
- **CMS improved information sharing with payers.** Many payers appreciated that RLF started to join payer and multistakeholder meetings late in PY2013 to share information on Milestone progress and provide updates on learning support. A few also indicated that CMS's regional feedback reports help keep them informed. These reports—distributed by CMS quarterly—compare expenditure and utilization data for Medicare FFS patients attributed to CPC practices over time and across regions. Still, payers expressed some frustration with the delayed release of CMS's Shared Savings Methodology and changes to the data aggregation contracting process.

4.4. Results of CPC multipayer collaboration

In each region, CPC brought together a consortium of payers and other stakeholders to discuss strategies for driving primary care practice transformation. As a result, payers aligned incentives and supports for CPC practices, and some payers are starting to apply lessons learned from their CPC participation to other regional initiatives.

4.4.1. Payers provided CPC practices with aligned financial incentives and took steps to provide them with aligned data feedback

Payers joined CPC to align financial incentives for practice transformation. The participation of multiple payers who collectively represent a substantial market share in each region ensures adequate CPC financial supports for participating practices. As noted in Chapter 3, attributed CPC patients represented 49 percent of practices' active patients. Moreover, some payers (especially those in Arkansas and Oregon) decided to align their shared savings plans with CMS's plan to reduce confusion among providers.

Payers in all but one region worked together to develop a common approach to data feedback for practices. As a result of these efforts, payers in Arkansas, Ohio/Kentucky, and Oregon produced aligned reports for practices in CPC's second program year (see Chapter 3). In addition, payers in Colorado, New York, Ohio/Kentucky, and Oklahoma continued to pursue data aggregation (producing a single report for practices that aggregates data on cost and service utilization measures across payers). Most payers indicated that it is challenging to develop a common approach to data feedback. As one payer put it, "We all want to get to the moon, but it is hard to get there."

In this section, we describe the decisions and challenges payers faced in developing a common approach to data feedback. Challenges to payers included the following:

- **Changes in CMS's role in data aggregation.** As noted in the first annual report, CMS's role in aggregation has changed during the initiative (Taylor et al. 2015). As of PY2014, non-CMS payers had to select a data aggregation vendor and establish local leadership and governance structures without CMS's involvement. CMS then planned to join these regional collaboratives as another participating payer. However, CMS faced substantial contracting delays because the federal government's procurement processes are not set up for joining procurement efforts with other entities, such as private payers. As a result, CMS had not joined any regional data aggregation efforts by the end of 2014. Although CMS anticipates joining these efforts in 2015, many payers felt CMS's inability to commit to aggregation efforts during the first two program years made some payers hesitant to join such efforts and raised the cost of aggregation because CMS could not commit to sharing fixed costs.
- **Unanticipated cost of data aggregation.** When signing on to participate in CPC, many payers had not budgeted for the cost of data aggregation. One said, "I don't think any of us were prepared for a data aggregator and the cost associated with that." Payers in regions that already had contracts with data aggregation vendors found the costs were difficult to quantify initially, and estimated costs increased as data aggregation details were sorted out. The division of costs among payers was also contentious in some regions. In Ohio/Kentucky, payers are considering requiring practices to help share the costs.
- **Time commitment to devise and implement an aggregation plan.** Many payers recognized that coming to a consensus on aggregating data takes a large time investment. Aggregation requires payer agreement on a range of factors, including the terms of the request for proposal from vendors, terms for sharing costs, vendor selection, and measure specification. In addition, payers must resolve file format issues with the vendor, conduct an internal security review to ensure personal health information is not shared inappropriately,

and conduct a legal review. Finally, the vendor must clean the data, test the reporting mechanism, and conduct trainings for practice staff. Payers in Colorado, a region that completed many of these steps in 2014, reported being surprised by how long the process took. Indeed, payers in New York and Ohio/Kentucky indicated that they may decide not to pursue data aggregation because they may not complete these tasks until CPC is in its final year.

- **Preserving confidentiality of negotiated rates and competitive advantage.** Several payers mentioned they were concerned about divulging negotiated provider payment rates when reporting performance on cost of care measures. Similarly, a couple of payers mentioned concerns that data aggregation would sacrifice their competitive advantage on data analytics.
- **Lack of fit with enterprise-wide approaches.** National payers often were reluctant to invest in regional aggregation efforts, noting that they had already invested in their own analytic reports to practices and did not want to veer from that enterprise-wide (corporate) approach. Indeed, those national payers that did pursue aggregation in their region often had to persuade the enterprise-level staff to allow their participation. In addition, for the most part, national payers indicated that they expected to continue to issue their own reports in parallel with any aggregated reports, which meant they would not accrue any offsetting savings.
- **Actionability of aggregated data.** Although not a widespread objection, a few payers expressed concern that aggregated reports would not be sufficiently actionable and, accordingly, practices would not use the data. One payer expressed concern that smaller practices would not have the analytic capabilities to use the data, and another noted that the time lag on claims data is too long to be sufficiently actionable. Another offered a specific example of concern about actionability: "[Physicians] can see they have higher A1c's than the rest of the market but [the data] does not drill down to what are we doing differently with our patients that leads to the higher A1c's."
- **Ability of CPC to be the vehicle for a sustainable data aggregation solution in their broader state context.** Some payers felt, given the limited duration of CPC, that data aggregation efforts should be integrated with other regional or statewide efforts. For example, one New York payer saw more usefulness in separately leveraging the state's all-payer claims database as an aggregator, and a payer in Arkansas mentioned that in the future the state's health information exchange may be better suited to take on the aggregator role. Similarly, one Oregon payer noted that data aggregation "is a bigger issue than CPC can solve." Although regions that continue to pursue data aggregation remain focused on aggregating claims data, payers have noted aggregating clinical data would also be useful. Future efforts in this area could be facilitated by (or contribute to) larger health information exchange initiatives in the region.
- **Domino effect.** Compounding these payers' concerns about their own participation in aggregation were concerns about the decisions of other payers. Payers noted that, if some payers—particularly large ones—drop out of the data aggregation effort, there may be a domino effect with other payers following suit. Participation of fewer payers would not only increase the costs to each remaining payer but also reduces the effort's comprehensiveness, and, therefore, the value of data aggregation to practices. Accordingly, the hesitancy of a

single payer (or minority of payers) to commit to aggregation, or their active decision to drop out of aggregation, often affected the ability of an entire region to pursue aggregation.

Overcoming these challenges, Colorado and Oklahoma payers contracted with data aggregation vendors by the end of PY2014.[38] In both regions, data aggregation vendors started receiving data files from payers and designing interactive data dashboards (see Appendix C for more information on their data aggregation progress). As of December 2014, CMS had not joined data aggregation efforts in either region. Payers in New York and Ohio/Kentucky also were continuing to pursue data aggregation, with negotiations at the end of PY2014 centered on payer costs and concern that aggregating data relatively late in the initiative may have limited usefulness. Because of the challenges, payers in Arkansas and Oregon decided to align their individual payer reports in terms of content, structure, or both, instead of data aggregation (see Chapter 3 for more information on these reports).

4.4.2. Payers used lessons learned from CPC to shape other initiatives promoting practice transformation

Most CPC payers are participating in other initiatives to drive primary care practice transformation (Table 4.3), many of which were under way before the start of CPC. According to a number of payers, CPC influenced the design or refinement of some of these initiatives. Payers indicated that CPC allows them to learn from its successes through discussions with each other, CMS, RLF, and participating practices. One payer stated that working with other CPC stakeholders is an "exciting interaction" and that CPC is "a learning exercise to inform our other programs."

In many regions, the state's Medicaid program leads the largest initiative to support primary care transformation other than CPC. In several regions, these initiatives are funded by CMS through a SIM award. (See Table 4.4 for an overview of SIM programs in CPC regions.) In some regions, payers view their state's SIM grant as a way to expand and sustain practice transformation started under CPC. In these regions, CPC payers and other participants in CPC multistakeholder meetings helped design the state's SIM award and are working together to implement it.

[38] Payers in the Ohio/Kentucky region made significant progress on data aggregation during PY2015. Their approach will be described in future reports.

Table 4.3. Number of CPC payers pursuing other initiatives to promote primary care transformation

Region	Percent of CPC payers pursuing other initiatives to transform primary care
Arkansas	75 (3 out of 4)
Colorado	67 (6 out of 9)
New Jersey	100 (4 out of 4)
New York	100 (4 out of 4)
Ohio/Kentucky	63 (5 out of 8)
Oklahoma	100 (3 out of 3)
Oregon	80 (4 out of 5)

Source: Interviews with CPC payers in summer 2014.

Table 4.4. State Innovation Model awards in CPC states

	Award date	Date primary care practices enrolled in PCMH-like initiative	Supports for primary care practices			
			PMPM	Shared savings	Learning support	Data sharing/ Feedback
Arkansas	Feb 2013	October 2013	X	X	X	X
Oregon[a]	Feb 2013	July 2012	X	X	X	
Colorado[b]	Dec 2014	Anticipated 2016	X	X	X	X
New York[b]	Dec 2014	TBD	TBD	TBD	TBD	TBD
Ohio[c]	Dec 2014	Anticipated 2016?	X	X	X	X
New Jersey[d]	Dec 2014					
Oklahoma[d]	Dec 2014					

Source: State Health Care Innovation Plans, interviews with CPC payers and CMS, and individual state SIM websites.

[a] Oregon's PCMH-like initiative included as a component of its SIM grant was in place before the state received a SIM award.

[b] In February 2013, Colorado and New York received model pre-testing awards to finalize their statewide innovation plans.

[c] In February 2013, Ohio received a model design award to develop a statewide innovation plan.

[d] New Jersey and Oklahoma are currently designing their statewide innovation model. The table will be updated when their State Health Care Innovation Plans are available.

PCMH = patient-centered medical home; SIM = State Innovation Model.

> "CPC has become the centerpiece of what multipayer work will look like in Colorado."
>
> *—Participating payer*

Most notably, payers in Arkansas, Colorado, and Ohio based components of their SIM award on CPC. Payers reported that doing so allowed them to avoid "recreating the wheel" and saved time gaining consensus on their state innovation plan because stakeholders had already bought into the CPC model. In Arkansas and Ohio, the PCMH component of their SIM awards are modeled directly on CPC. CPC and SIM practices currently (or will) work toward similar aims and receive many of the same practice supports from payers participating in both initiatives. An Ohio payer indicated that the state is "leveraging the framework of CPC as a scalable model to promote PCMH transformation across the state." Similarly, the Colorado SIM award is focusing on behavioral health and primary care integration, and payers drew on lessons learned from CPC in these areas to help shape the initiative.

In addition, some payers with their own existing programs drew on their experience in CPC to refine their single-payer efforts. One Oklahoma payer that is incorporating some CPC Milestone requirements into its PCMH program commented, "We are taking the best out of CPC and dropping that into our commercial program." Similarly, Oklahoma Medicaid incorporated Milestone requirements concerning the integration of physical and behavioral health into its contracts with state-recognized PCMH providers.

> "We have talked to practices in our [other] program about what we…like about CPC and would like them to focus on."
>
> *—Participating payer*

In addition to influencing program design, some payers indicated that CPC sparked practice and payer interest in other regional initiatives. For example, an Arkansas payer said that non-CPC practices heard about CPC from their colleagues and were eager to participate in a second "wave of transformation" under the state's SIM award. Regarding payer participation, several payers with long-established PCMH programs value multipayer collaboration in CPC because it encouraged other payers to make similar investments in practice transformation both within and outside of CPC.

These other initiatives encourage additional practices in CPC regions to transform and provide them with similar supports toward that goal. Several of the initiatives target a different set of primary care practices than CPC, increasing the diversity of practices receiving CPC-like interventions. For example, Arkansas's SIM program targets recruitment among rural practices with less sophisticated EHR and quality improvement capabilities than those eligible to participate in CPC (although most primary care practices with at least 300 attributed Medicaid beneficiaries can participate). Similarly, two private payers (one in Colorado and one in Ohio/Kentucky) designed their programs to target smaller practices with less experience participating in transformation efforts.

Although less common, some CPC payers also indicated that other payer initiatives influenced CPC. Specifically, payers indicated that:

- Practices that participated in prior initiatives were better prepared to participate in CPC than practices new to practice transformation.
- Some CPC practices also participate in other payer initiatives and gain access to additional resources provided under those programs. (Chapter 3 provides more information on additional support available to CPC practices.)
- Stakeholders working together on SIM or other multipayer initiatives before or concurrent with CPC fosters positive multistakeholder relationships for CPC.

Most payers found CPC and other programs to be mutually reinforcing, but several expressed concern that payers operating multiple initiatives simultaneously would be confusing to practices or result in change fatigue. Payers in Oregon, a region with substantial prior experience with practice transformation and several concurrent efforts, most commonly raised this issue and noted that increased alignment between CPC and other initiatives could address these concerns.

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5. HOW ARE CPC PRACTICES CHANGING THE WAY THEY DELIVER CARE THROUGH WORK ON SPECIFIC MILESTONES?

5.1. Introduction

CPC requires that participating practices make many complex, interconnected changes in how they deliver care to their patients, through a focus on five key functions in the delivery of care: (1) access and continuity, (2) planned care for chronic conditions and preventive care, (3) risk-stratified care management, (4) patient and caregiver engagement, and (5) coordination of care across the medical neighborhood. These functions are considered a primary driver in achieving the CPC aims, as specified in the CPC change package.[39] To promote progress toward these five functions, CMMI specified a series of Milestones at the start of CPC, and it updates the requirements for each Milestone annually to build on practices' progress in the prior year (Table 5.1). The Milestones provide guideposts or stepping stones to achieving the five functions. Different Milestones may contribute to multiple functions. For example, work on Milestone 9 supports several functions and other Milestones. Although the Milestones define specific areas of work, they allow practices considerable latitude in how they meet these goals and change how they provide care. In each year of CPC, the Milestones build on the prior year's Milestones, evolving to encourage progressively more challenging transformation activities. CMS assesses whether practices meet targets set within the Milestones, which are considered minimum requirements to remain in the program.

Table 5.1. CPC Milestones for PY2014

1. **Budget.** Report actual year 1 CPC expenditures, forecast year 2 CPC revenues, and plan anticipated CPC year 2 expenditures.
2. **Care management for high-risk patients.** Continue to risk stratify patients and expand care management activities for highest-risk patients and implement one of three strategies (behavioral health integration, medication management, or self-management support) and report progress on strategies quarterly.
3. **Access by patients and enhanced access.** Enhance patients' ability to communicate 24/7 with the care team outside of the office visit by implementing an asynchronous form of communication (for example, email) and ensuring timely responses.
4. **Patient experience.** Assess patient experience through patient surveys or patient and family advisory council meetings and develop communication materials to inform patients of the resulting changes the practice is making.
5. **Quality improvement.** Review electronic health record (EHR)–based clinical quality measures (eCQMs) and provide a quarterly report to provide the care team with actionable information to improve care.
6. **Care coordination across the medical neighborhood.** Track patients by implementing two of three options: telephone follow-up of patients with emergency department visits within one week; contact at least 75 percent of hospitalized patients within 72 hours of discharge; and enact care compacts with at least two groups of high-volume specialists.
7. **Shared decision making.** Engage patients and families by selecting decision-making aids for two preference-sensitive health conditions and track patient use on a quarterly basis.
8. **Participating in learning collaborative.** Participate in regional and national learning offerings, contribute to collaboration site, and communicate with regional learning faculty.
9. **Health information technology.** Attest to achieving meaningful use, adopt 2014 Edition ONC-certified EHR, and identify settings for electronic information exchange.

ONC = Office of the National Coordinator for Health Information Technology.

[39] The CPC change package describes the underlying logic of CPC, including the primary and secondary drivers to achieve the aims of CPC and the concepts and tactics that support the changes. It is available at: https://innovation.cms.gov/Files/x/cpcidiagram.pdf.

In this chapter, we describe the details of practices' work implementing CPC overall and each Milestone, using a range of data sources. We focus on findings that are relatively large, statistically significant, and seem to be supported by data sources covering different perspectives. Because we make many comparisons, however, we risk finding statistically significant findings by chance. Therefore, we view our quantitative results as providing a general *qualitative* understanding of practice implementation.

In Section 5.2, we provide an overview of key findings on practice changes in care delivery. In Section 5.3, to give a general sense of change over time, we present practices' self-reported approaches to delivering different aspects of primary care at the start of CPC (2012) and in early 2014 for CPC as a whole, by region, and by selected practice characteristics.

In Section 5.4, we focus on Milestones 2 through 9.[40] For each Milestone, we begin with an overview of its implementation in PY2014, followed by detailed findings from a variety of data sources. These sources include:

- CPC practices' self-reported 2014 Milestone data
- Three quantitative surveys: a practice survey fielded in 2012 and 2014, a survey of clinicians in 2013–2014, and a survey of staff in 2013–2014[41]
- Qualitative data collected in 2014 from 21 deep-dive practices (3 per region) selected for intensive study,[42] which help provide concrete examples of the quantitative findings, including information on how practices are implementing each Milestone and associated barriers and facilitators[43]

In Section 5.5, we describe the assessment by CMS and by the learning faculty of practice progress as a whole across the Milestones and provide counts of practices placed on a corrective action plan (CAP). In Section 5.6, we summarize cross-cutting barriers and facilitators to implementation progress, each of which span several Milestones. Finally, in Section 5.7, we outline implications of these findings for CPC's implementation during the remainder of the initiative.

[40] Milestone 1 on budgeting of CPC funds is not included here because it does not reflect transformation per se; see Chapter 3 for this information.

[41] We conducted the CPC practice survey at the start of the initiative, October through December 2012, and again 18 to 21 months after CPC began, in April through July 2014. (The first round of the practice survey included only CPC practices because the comparison practices had not been selected yet. The second round included both CPC and comparison practices.) We conducted the first round of the surveys of clinicians and staff from September 2013 through February 2014, 11 to 16 months after CPC began. Analyses of the clinician survey present estimates only for physician respondents because of the small number of nurse practitioners and physician assistants who responded.

[42] For more information on selection and characteristics of deep-dive practices, as well as analysis methods, see Peikes et al. 2014 and Taylor et al. 2015.

[43] Although the time periods for fielding the different surveys and qualitative in-depth interviews for this report differ, they all occurred predominantly in PY2014.

5.2. Key takeaways on practice changes in care delivery

We have identified the following key findings on how CPC practices are changing the way they deliver care and on the challenges they face.

Practices are working hard to transform care delivery. Across Milestones, multiple data sources provide clear evidence that practices are undertaking substantial and difficult transformation and improving how they deliver care. Practices spent much of PY2013 trying to understand CPC and set up staffing, care processes, and workflows. In PY2014, they made meaningful progress in each of the CPC Milestones, demonstrating that practice change is indeed occurring in CPC practices. Progress has been notable, but there is also room for continued improvement in workflows and care processes for each Milestone in the coming year, as expected at this phase of implementation.

Practices' self-reported approaches to aspects of primary care delivery overall, and on risk-stratified care management and access to care in particular, suggest considerable improvement since the start of CPC. Specifically:

- CPC practices' self-reported information on their approaches to delivering primary care indicated improvement in each region during the first two years of CPC.[44]
- Practices made the largest improvements in the delivery of risk-stratified care management, according to data sources:
  - Practices' care management activities have evolved from an initial focus on assigning risk scores to patients to using the risk scores to allocate care management resources. Before CPC, most practices were not systematically risk stratifying their patients. After two years, nearly all were performing risk stratification and had hired or repurposed nurses or other staff to help with care management for their high-risk patients, particularly in education and monitoring activities related to chronic condition management and follow-up after hospital or ED discharge.
  - Care managers reported working more closely in partnership with clinicians since the start of CPC to help manage and monitor patients at highest risk.
  - Because a care manager was a new team role for many practices, some have struggled with learning to use care managers effectively.
- The area with the second-largest improvement was access to care, according to practices' survey responses. Most deep-dive practices noted their efforts have focused on patient portal uptake, improving patients' wait times for appointments, improving patients' telephone access to the practice, and providing after-hours access to clinicians via email, by telephone, or in person.

[44] Self-reported data allow the evaluation to rapidly collect information on how practices are delivering care. Although no financial incentives are associated with the survey responses, practices may interpret the response categories or their care delivery approaches differently. The CPC initiative also may raise the standards of some practices, leading to lower ratings of the same approaches over time for some practices.

- Deep-dive practices reported risk-stratified care management (Milestone 2) and timely follow-up after hospital discharge and ED visits (Milestone 6) as the areas most clinically relevant to improving patient care.

In making these changes to care delivery, **deep-dive practices that used team-based approaches to workflows for CPC Milestones found implementation more manageable.** Clear role delegation and open communication helped support teamwork. Spreading the work across a variety of staff in the practice decreased the burden on any one staff member and also made staff feel they were working together toward improvement goals. It was challenging to get all clinicians and staff in a CPC practice to buy into the workflow and EHR documentation changes needed to implement the Milestones. In larger practices, those in which only a lead clinician or a few clinicians and staff members were implementing the work of CPC reported more difficulty meeting the Milestones.

Practices continue to face implementation challenges midway through CPC. This is to be expected at this stage for an initiative that requires care delivery changes on many fronts.

- In general, most deep-dive practices felt that meeting the requirements of all nine Milestones plus the reporting requirements is overwhelming and would prefer to focus on fewer Milestones.
- Although CPC funding is substantial, it was challenging for some small practices to financially support care managers with CPC funds alone. Several deep-dive practices also seemed to need additional funding, beyond CPC resources, to hire or consult with HIT experts to support documentation processes and reporting.
- Although system-affiliated practices tend to have more resources (including, in some cases, access to behavioral health providers, pharmacists, and HIT support), such practices often have less autonomy in making decisions, altering workflows, and hiring and supervising nurse care managers. In a few deep-dive practices, this lower autonomy resulted in less practice buy-in for some Milestones, such as shared decision making.
- In general, current limitations in EHR functionalities resulted in inadequate support for practices to efficiently report eCQMs (Milestone 5) or to create and modify dynamic care plans that can be adapted as patient needs change over time (Milestone 2). These EHR limitations posed challenges to the work of care managers, clinicians, and other staff who need to enter, track, and retrieve data for these Milestones.
- Electronic health information exchange between primary care providers, specialists, and hospitals to support care coordination and care management remained inadequate, largely due to lack of interoperability. This was true for independent practices that are often not on the same HIT system as other providers in their medical neighborhood, as well as for system-owned practices when they needed to coordinate care with providers outside of their system.

- Despite practices' attempts to implement the use of patient decision aids (PDAs) for shared decision making, clinicians in a few of the 21 deep-dive practices, as in the previous rounds, still did not seem to understand that the concept of shared decision making in CPC applies to preference-sensitive conditions,[45] rather than to more general patient education and engagement. Even among those who do, many are concerned about the time required to engage patients in shared decision making.
- Practice transformation takes time. CPC practices have the processes in place to make change, and PY2014 began to show substantial evidence that care delivery changes are beginning to take hold. In the coming year, we expect that practices will continue to improve and refine their approaches to delivering comprehensive primary care.

5.3. Changes over time in CPC practices' approaches to primary care delivery

Through the practice survey, CPC practices self-reported how they delivered primary care in 2012 and again in 2014.[46] In both rounds of the survey, we used a modified form of the Patient-Centered Medical Home Assessment (PCMH-A) tool (Safety Net Medical Home Initiative 2014) that we adapted for the CPC evaluation to capture approaches to care delivery in seven areas (Table 5.2). Although the seven areas do not line up one-to-one with the CPC Milestones or functions, these areas are fairly consistent with CPC Milestones and functions, cover care processes and supports that prior studies suggest are important to primary care redesign, and can be used to track progress.[47] Practice ratings indicated improvement during the first two years of CPC, with the largest improvements in the delivery of risk-stratified care management. As expected at this stage of CPC, their self-reported data indicate that practices still face substantial opportunities for improvement during the rest of CPC.

[45] Preference-sensitive conditions refer to conditions where two or more medically acceptable options exist and choice should depend on patient preferences.

[46] Specifically, we asked CPC practices and comparison practices to report the approaches they use to deliver primary care on an annual practice survey. The first round of the practice survey, fielded in 2012, included only CPC practices, because we had not yet selected a comparison group. The second round, fielded in 2014, included both CPC and comparison practices.

[47] The first survey round contained 41 questions based on a modified version of the PCMH-A instrument (v.1.3) developed by the MacColl Center for Health Care Innovation to measure transformation progress in safety net clinics in eight change concept areas established as key components of PCMH http://www.improvingchroniccare.org/index.php?p=PCMH_Change_Concepts&s=261. Our version contained 26 items from the 35-items in the PCMH-A. To more closely measure the areas of CPC focus, we changed the order and domain assignment for some of these questions. Because the PCMH-A did not cover all the aspects of primary care delivery relevant to the CPC evaluation, we included 15 questions that we either developed ourselves or adapted from their questions. We dropped three of these questions from the second round survey, and dropped one question from the scores because it was not correlated with any other questions, leaving 37 questions. We also conducted a factor analysis and weighted the responses in each domain and the total score based on the results.

Table 5.2. Seven domains of primary care delivery measured by the CPC practice survey

1. Continuity of care	• Empanelment of patients • The extent to which patients are encouraged to, and usually see their own provider and practice team
2. Access to care	• Flexibility of appointment systems • Patients' ability to communicate with practice teams using their preferred mode of communication, access providers after hours, and engage in phone or group visits with providers • Clinicians' access to patient's medical record after hours
3. Planned care for chronic conditions and preventive care	• Availability and proactive use of patient registries by practice teams • The integration of evidence-based guidelines into care plans and protocols • Quality and focus of patient visits on acute and planned care needs • The extent to which evidence-based reminders to providers are specific to the individual patient encounter • Use of non-physician practice team members in providing clinical care • The consistency of medical reconciliation for all patients and notification to patients of lab and radiology results
4. Risk-stratified care management	• Degree to which a standard method or tool to stratify patients by risk level is used and guides care delivery • The provision of clinical care management services for high-risk patients by care managers integrated into the practice team • The availability of registry or panel-level data to assess and manage care for practice populations
5. Patient and caregiver engagement	• The incorporation of patient and family preferences in planning and organizing care • How practice teams involve patients in shared decision making • Communication with patients is at a level, and in a language that patients understand • The provision of self-management support by members of the practice team • How test results and care plans are communicated to patients • The use of feedback from a patient and family caregiver council to guide practice improvements
6. Coordination of care across the medical neighborhood	• Tracking of patient referrals • The collaborative development of care plans with patients and families that include self-management and clinical management goals, and are used to guide care • The extent to which referral relationships with specialists are formalized • Availability of behavioral health services for patients • The ease of obtaining referrals for specialty care, hospital care, or supportive community-based resources and whether relevant information is exchanged with specialists and other providers before and after the patient visit • Practice staff follow-up with patients following ER/hospital visits • How practices link patients to supportive community-based resources • The timeliness of information received from hospitals, ERs, and specialists following a patient's visit • The proportion of patients for whom the practice knows the total cost to payers for medical care

7. Continuous improvement driven by data	• Practice's use of quality improvement (QI) activities are based on proven improvement strategies and whether activities are supported by a QI infrastructure with meaningful patient and family involvement • The availability of staff, resources, and time for QI activities • The availability of comprehensive performance measures to practice staff and individual providers, and externally to patients and other agencies • The extent to which hiring and training processes focus on improving care and creating patient-centered care

See Appendix D, Table D.1, for a complete list of the survey questions.

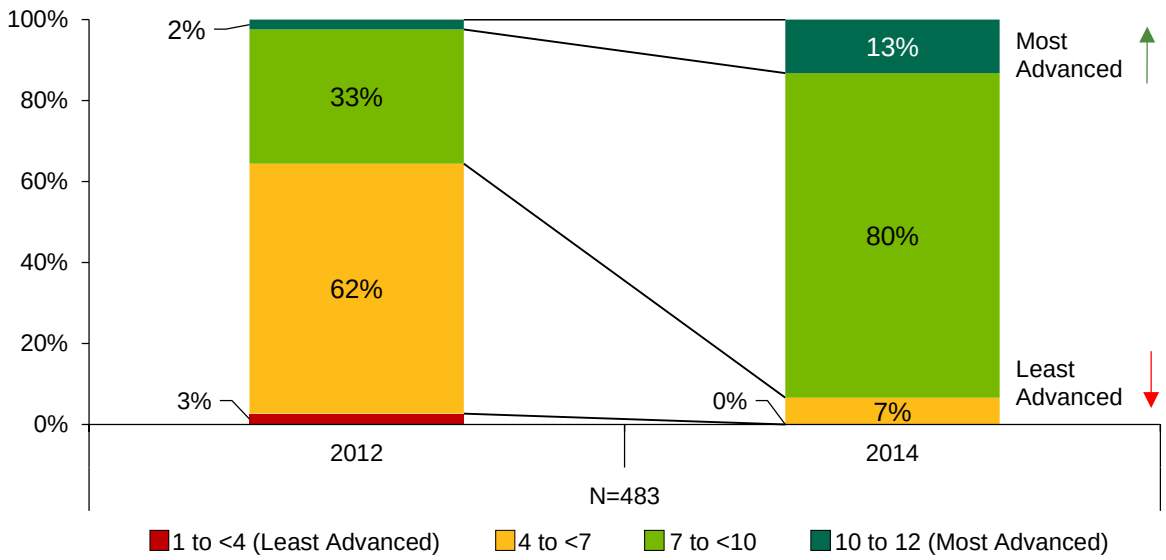
The survey asks practices to rate their delivery of various aspects of primary care on a 12-point ordinal scale, where 12 indicates the best approaches to delivering care. That scale is subdivided into four boxes of three points each on the response form, to facilitate interpretation by respondents. Work remains to determine how changes in scores on various domains and their component questions are linked to improved outcomes (see Chapter 8 for some initial findings); however, this information provides some early insights about transformation.

Overall, practices reported more advanced approaches to delivering primary care over time. Overall scores on the modified PCMH-A survey—totaling scores across seven primary care domains—improved by an average of 2.3 points (from 6.5 to 8.8 out of 12 points) across all CPC practices.

Figure 5.1 shows how practices CPC-wide improved their overall scores between 2012 and 2014. The proportion of CPC practices with relatively low scores of 1 to less than 7 fell dramatically, from 65 to 7 percent between 2012 and 2014. The proportion with scores of 7 to less than 10 increased from 33 to 80 percent, and the proportion of practices with scores indicating the highest performance, 10 to 12, grew from 2 to 13 percent.

By region, Oklahoma reported the most improvement, increasing 3.2 points in its overall PCMH-A score, from 5.7 (the lowest baseline score of all regions) to 8.9 (Table 5.3). Of all the regions, Oregon practices reported slightly lower levels of improvement over time (1.9 points, from 6.9 to 8.8), probably because their average score in 2012 was higher than those of other regions (see Appendix D, Tables D.2a-D.2b).

Figure 5.1. Distribution of modified PCMH-A score for practices, 2012 to 2014



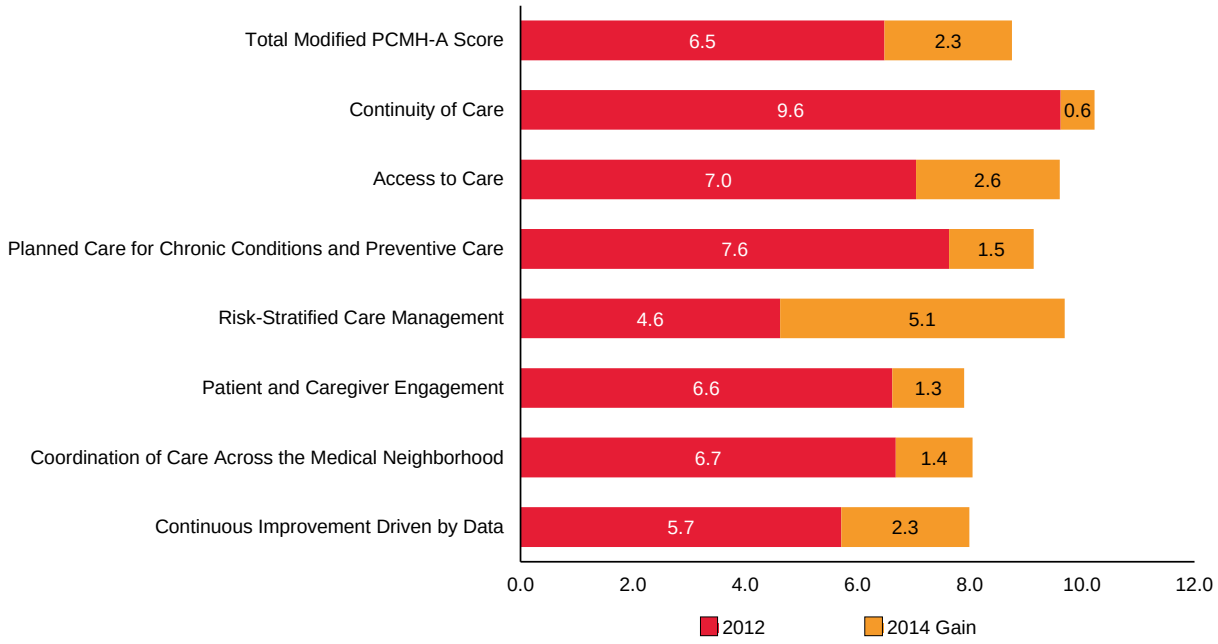
Source: Mathematica analysis of the CPC practice survey results, fielded by Mathematica, using 483 practices that responded in both 2012 and 2014.

Notes: Modified PCMH-A = Patient-Centered Medical Home Assessment modified for the evaluation of CPC.

Some domains of primary care delivery improved more than others (Figure 5.2). Looking separately at each of the seven primary care domains, CPC practices improved from 2012 to 2014 in all areas, with gains ranging from a 0.6 in continuity of care (in part because practices were already scoring a relatively high 9.6 in this area in 2012) to a high of 5.1 in the domain on risk-stratified care management (the lowest-scoring domain in 2012, at 4.6). The domain with the second-largest improvement was access to care, with an improvement of 2.6 (from 7.0 to 9.6). (Appendix D, Table D.3 shows the items with favorable changes over time for CPC practices, grouped according to the size of the change.)

Despite gains in each domain and in each region between 2012 and 2014, there is still room for improvement for most domains during the rest of CPC. CPC-wide, the average score in each domain ranged from 7.9 to 10.2 in 2014, leaving room for improvement toward the top score of 12.

Figure 5.2. Average modified PCMH-A scores in 2012 and the gain in 2014, overall and by domain



Source: Mathematica analysis of the CPC practice survey, fielded by Mathematica, using 483 practices that responded in both 2012 and 2014.

Notes: Summary modified PCMH-A scales score (1 = lowest functioning, 12 = highest functioning).
Modified PCMH-A = Patient-Centered Medical Home Assessment modified for the evaluation of CPC.

Improvements in care delivery generally were not correlated with practice characteristics or CPC funding per clinician. We also examined whether certain types of CPC practices experienced bigger changes in the modified PCMH-A scores (overall and by domain). The magnitude of changes in the overall PCMH-A scores from 2012 to 2014 was not consistently associated with practice size, practice ownership, how clinicians were compensated by the practice, or CPC funding per clinician (see Appendix D, Tables D.4a–D.4b).

CPC appears to have helped practices with lower baseline scores on the modified PCMH-A survey improve more. Practices with lower scores at baseline showed greater improvements, perhaps because they had more room for improvement. This included practices that:

- Were *not* a recognized PCMH before CPC
- Were rated in the bottom two-thirds of CMS scores for their application to participate in CPC at baseline
- Scored in the bottom third of PCMH-A scores in the baseline 2012 practice survey

Table 5.3. CPC practices' self-reported primary care delivery approaches in 2012 and 2014

	CPC-wide			AR			CO			NJ			NY			OH/KY			OK			OR		
	2012	2014	Mean change	2012	2014	Mean change	2012	2014	Mean change	2012	2014	Mean change	2012	2014	Mean change	2012	2014	Mean change	2012	2014	Mean change	2012	2014	Mean change
Overall modified PCMH-A score	6.5	8.8	2.3	6.5	8.7	2.3	6.6	8.8	2.2	6.2	8.6	2.4	6.5	8.2	1.8	6.9	9.2	2.3	5.7	8.9	3.2	6.9	8.8	1.9
Continuity of care	9.6	10.2	0.6	10.3	10.7	0.5	9.1	10.0	0.9	9.5	9.9	0.4	9.9	10.3	0.4	9.9	10.1	0.2	9.5	10.1	0.6	9.3	10.5	1.2
Access to care	7.0	9.6	2.6	6.6	9.6	3.0	7.1	9.2	2.0	7.1	9.4	2.3	7.2	9.4	2.2	7.5	10.4	2.9	5.9	9.3	3.4	7.6	9.9	2.3
Planned care for chronic conditions and preventive care	7.6	9.1	1.5	7.9	9.1	1.2	7.9	9.2	1.3	7.5	9.3	1.8	7.4	8.4	0.9	8.0	9.7	1.7	6.8	9.4	2.5	7.9	9.2	1.3
Risk-stratified care management	4.6	9.7	5.1	4.5	10.1	5.6	4.8	9.6	4.8	4.6	9.5	4.9	4.5	9.1	4.6	4.8	10.1	5.2	3.5	10.2	6.7	5.6	9.4	3.8
Patient and caregiver engagement	6.6	7.9	1.3	6.8	7.5	0.8	6.5	8.3	1.8	6.4	7.7	1.3	6.6	7.7	1.1	7.2	8.3	1.1	6.0	8.0	2.0	6.8	7.8	1.0
Coordination of care across the medical neighborhood	6.7	8.1	1.4	6.9	7.9	1.1	6.7	8.4	1.7	6.5	7.9	1.4	6.8	7.6	0.8	6.9	8.1	1.2	6.2	8.2	2.0	6.9	8.3	1.4
Continuous improvement driven by data	5.7	8.0	2.3	5.5	8.0	2.5	6.1	8.2	2.0	4.8	7.9	3.1	5.6	7.0	1.4	6.6	8.7	2.1	4.7	8.0	3.4	6.4	8.1	1.7

Source: Mathematica analysis of the CPC practice survey results, fielded by Mathematica, using 483 practices that responded in both 2012 and 2014.

Notes: Estimates are absolute changes in the modified PCMH-A score and its seven domains; the range for each score is 1–12 (lowest- to highest-functioning). Composite scores were calculated using a weighted average of each practice's response to questions in a given area. The weights are factor loadings for each question based on the correlation between the individual question and the domain it measures and represent the reliability of a question in measuring a corresponding CPC function. These weights are often referred to in the literature as reliability weights. If a practice skipped a question, we upweighted the weights of the nonmissing responses in the domain so that the sum of the weights equals 1, whether or not one or more responses were missing. After composite scores were created for each domain, we calculated a reliability-weighted summary measure, the overall modified PCMH-A score.

Modified PCMH-A = Patient-Centered Medical Home Assessment modified for the evaluation of CPC.

In each case, practices that scored lower in 2012 ended up with comparable levels of scores in 2014 to those that scored higher in 2012, which suggests that CPC helped practices with lower baseline scores on the modified PCMH-A survey more than those that had higher scores. Practices also on average reported slightly *greater* improvements in PCMH-A scores if they reported greater (versus less) autonomy to plan and complete Milestones (although there was no association with autonomy on staff hiring, organizational priorities, or clinical work processes). Greater autonomy at the practice level was also noted by deep-dive practices to facilitate implementation (see below).

CPC practices had higher scores on measures of approaches to primary care delivery than comparison practices in 2014. Comparing CPC and comparison practices in 2014, the first year data were available for comparison practices, CPC practices had statistically significantly higher average modified PCMH-A scores (8.8 versus 8.0, out of a maximum score of 12) (see Appendix D, Table D.7a). There were statistically significant differences between CPC and comparison practices on five of the seven domains. Access to care and continuous improvement driven by data were 0.8 higher for CPC than comparison practices; the largest difference, 2.6, occurred in risk-stratified care management, a key focus of CPC during its first two years. Differences in the other statistically significant domains also favored the CPC practices, but were smaller (0.05–0.7 points). These findings suggest that roughly two years after CPC began, CPC practices had higher functioning than comparison practices as measured by the modified PCMH-A. However, these differences between CPC and comparison practices from the survey data reflect differences in 2014. Because we cannot control for any possible differences between the CPC and comparison practices in 2012, these 2014 differences should be interpreted with caution.

5.4. Progress on individual Milestones

Having described practices' self-assessment of primary care delivery, we turn to their progress on the individual Milestones 2 through 9. (We discuss Milestone 1—which focuses on budgeting of CPC funds—in Chapter 3, because it reflects a program support, rather than transformation per se.) These findings are drawn from the Milestone data that practices submitted to CMS; results from the practice, clinician, and staff surveys; and qualitative data collected during site visits to deep-dive practices.

5.4.1. Milestone 2: Care management for high-risk patients

According to deep-dive practices, CMS, other participating payers, and learning faculty, Milestone 2 is one of the most important and challenging of CPC's Milestones. In PY2014, Milestone 2 required each practice to continue to risk stratify its patients, expand care management activities for its highest-risk patients, and select one of three advanced primary care strategies.

To perform risk-stratified care management, practices must take three steps:

1. Empanel each active patient (meaning that a patient is linked directly to a provider or care team, and that provider or care team has responsibility for that patient)
2. Risk stratify each empaneled patient to help define their level of need

3. Provide care management in a manner consistent with each patient's needs

In addition to continuing the risk-stratified care management work on this Milestone from PY2013 and refining it as needed, in PY2014, CPC asked practices to select and implement one of three advanced primary care management strategies: (1) behavioral health integration, (2) medication management, or (3) self-management support.

a. Overview of findings

All data sources examined demonstrate that the area of greatest transformation for CPC practices is risk-stratified care management. The Milestone 2 data and the deep-dive data indicate that CPC practices used multiple sources of information and iterative processes to risk stratify patients. Risk stratification was typically carried out by the primary care physician. Care managers, who were predominantly nurses, tended to focus on patient education, coaching, and monitoring for chronic conditions, care plan development in conjunction with the physician, postdischarge contact, and management of care transitions. CPC practices' responses to questions about their approach to delivering risk-stratified care management suggest a large improvement from 2012 to 2014; in 2014, CPC practices reported a composite score statistically higher (2.6 points on a 12-point scale) than comparison practices (see Appendix D, Tables D.2a and D.7a). However, surveys, Milestone data, and deep-dive data also indicate room for improvement in the delivery of risk-stratified care management. Survey and deep-dive data indicate that many CPC practices have implemented risk-stratified care management capabilities only partially or only with some physicians. Among those that have done so, deep-dive data suggest that most clinicians and care managers find risk stratification helpful in deciding to whom care manager resources should be directed. CPC practices have steadily increased the full-time equivalent (FTE) staff dedicated to care management in each year of CPC, and care managers are slowly but increasingly becoming part of CPC practices' interprofessional team. Some small independent practices, however, found it challenging to afford a full-time nurse care manager. Some CPC practices in large health systems that have access to specialized staff, such as mental health workers and pharmacists, were in a better position to pursue the behavioral health integration and medication management advanced primary care strategies than were small, independent practices.

b. Detailed findings

b.i. Empanelment

To perform risk-stratified care management, practices must first empanel each active patient to a provider or care team. This is proceeding well. Milestone data submissions indicate that, by the end of 2014, 98 percent of CPC practices' active patients were "empaneled or identified in the EHR as being associated with a primary care practitioner"[48] (Table 5.4). This is an increase from 91 percent at the end of 2013.[49] In addition, in the 2014 practice survey, CPC practices were more likely than comparison practices to report that they empaneled patients and encouraged them to see their specified provider and practice team (see Appendix D, Table D.8a).

[48] This is the terminology used in the CPC Program Year 2014 Implementation and Milestone Reporting Summary Guide. Updated June 2014. Center for Medicare and Medicaid Innovation.

[49] Source for this information is the CPC Fast Facts Mid-Year Update: Program Year 2014 Year 2.

Table 5.4. Percentage of patients empaneled by CPC practices at end of PY2014, CPC-wide and by region

Empaneled patients	CPC-wide	AR	CO	NJ	NY	OH/ KY	OK	OR
Average percentage	98%	97%	98%	99%	98%	99%	94%	98%
Range (minimum–maximum)	64–100%	75–100%	75–100%	88–100%	88–100%	92–100%	64–100%	81–100%

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Notes: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014. Calculations reflect empaneled patients divided by active patients. The percentage of patients was calculated for each practice, then averaged overall and within each region.

b.ii. Risk stratification

In PY2014, practices continued to refine their risk stratification categories to try to improve risk score accuracy and place fewer patients in the high-risk tier so that care managers could focus resources on the highest-risk patients. CPC practices used a range of data sources to risk stratify their patients. However, interpretation of Milestone data on CPC practices' risk stratification approaches is complicated, in part because practices may have interpreted the response categories (which were somewhat vague) differently and because most practices used a combination of data sources.

The types of data used most commonly by CPC practices included clinician judgment of patient risk; algorithms; utilization levels; clinical data (for example, from the EHR); patients' level of disease control; and the number and types of chronic conditions the patient has (Table 5.5).

Table 5.5. Types of data used by CPC practices to risk stratify patients in PY2014, CPC-wide and by region

Types of data used for risk stratification	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Clinician judgment of patient risk	**90%**	94%	85%	97%	96%	92%	73%	94%
Algorithm (home grown or from AAFP or other group)	**87%**	86%	74%	91%	99%	97%	98%	66%
Utilization levels (ED visits, office visits, hospitalizations, costs)	**84%**	90%	89%	90%	73%	96%	60%	90%
Clinical data (practice, hospital)	**79%**	81%	84%	93%	61%	76%	76%	87%
Level of disease control	**78%**	92%	81%	91%	65%	80%	76%	61%
Diagnoses (chronic conditions listed in implementation guide)	**74%**	92%	79%	90%	86%	21%	63%	93%
Number of medications	**55%**	60%	52%	75%	53%	20%	63%	67%
Claims (from payers)	**31%**	17%	47%	48%	32%	35%	19%	13%
Other psychosocial or behavioral risk factors	**29%**	29%	41%	58%	20%	12%	8%	36%

Types of data used for risk stratification	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Combination of the above approaches	**100%**	100%	100%	100%	100%	100%	100%	100%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Notes: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014. Practices could check all data types that apply.

The combinations of data most frequently used by CPC practices for risk stratification (Table 5.6) show that CPC practices most often used clinical judgment of risk, combined with one or more additional data sources. All CPC practices reported using two or more types of data to risk stratify their patients; 95 percent of practices used three or more data sources. The most common combination accounted for only 12 percent of CPC practices.

Table 5.6. Top 12 most common risk stratification methodology combinations (reflecting combinations of data used)

			Type of Data Used								
Risk-stratification approach combination	Number of practices	Percent of practices	Clinical	Utilization	Diagnosis	Level of disease control	Number of medications	Algorithm	Clinician judgment of risk	Claims	Other psychosocial or behavioral risk factors
Combination 1	57	12%	X	X	X	X	X	X	X		
Combination 2	49	10%	X	X	X	X	X	X	X	X	X
Combination 3	37	8%	X	X	X	X	X	X	X		X
Combination 4	30	6%	X	X	X	X		X	X		
Combination 5	25	5%	X	X	X	X	X	X	X	X	
Combination 6	24	5%	X	X		X		X	X	X	

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Note: Percentages are based on 482 practices that submitted Milestone data for the last quarter of 2014. We provide the most common combinations used by 5 percent or more of practices. Percentages do not add to 100 because the many remaining combinations (each of which accounted for fewer than 2 percent of practices) of data sources are not presented here. Practices could check all data sources used, as listed in the MS reporting guide.

Wording on data sources is taken verbatim from the CPC reporting guide. Clinical data source includes practice, hospital, and so on. Utilization data source includes ED visits, office visits, hospitalizations, and costs. Algorithm data source includes home-grown algorithms or algorithms from the AAFP or another group. Claims data source includes claims from payers.

AAFP = American Academy of Family Physicians; ED = emergency department.

Risk stratification in deep-dive practices

Nearly all deep-dive practices have risk stratification processes in place. As they did at our first site visits in summer 2013, practices used a variety of approaches to risk stratify their patients. Many continue to assign risk scores to patients as needed as they come in for office visits or experience a major event (such as a hospitalization), with the goal of eventually risk stratifying the entire patient population. Other practices take a more population-based approach by systematically assigning risk scores to all patients. For patients with a single chronic condition (for example, a 65-year-old patient with diabetes but no other health conditions), the risk score was based primarily on the presence and severity of that particular condition. In most cases, however, as seen in the Milestone reporting, practices use a range of information sources to risk stratify patients.

Practice activities related to care management have evolved from initial concerns focused on assigning risk scores to using the risk scores to allocate care management resources. Some deep-dive practices are using risk stratification to focus care management resources on certain patient subgroups, such as their highest-risk patients and those with economic barriers to accessing care. In the latter case, a few practices noted that something simple (such as providing patients with a cab voucher to come in for a primary care visit) can be key to engaging patients to work with a care manager to monitor their chronic conditions.

b.iii. Risk-stratified care management

After assigning risk scores to patients, practices pursued care management activities for those at high risk as part of Milestone 2. Care management targets those patients who are at high (or rapidly rising) risk and likely to benefit from more intensive follow-up and self-management support. In addition to these activities, CMS required CPC practices to select and implement one of three "advanced primary care management strategies." Overlap exists between general care management activities and these three strategies, particularly in self-management support. In this section, therefore, we first discuss care management more generally, then proceed to practices' experiences with the three strategies.

CPC is leading to large self-reported increases in practices' provision of risk-stratified care management, but there is still room for improvement. In the CPC practice survey's modified version of the PCMH-A, risk-stratified care management improved more than any other aspect of CPC from 2012 to 2014 (an average increase of 5.1 points on a 12-point scale). Oklahoma practices, which had relatively low scores compared to other regions in 2012, nearly tripled their scores in risk-stratified care management between 2012 and 2014—from 3.5 to 10.2 points. Even Oregon, which had the highest score on this domain in 2012, experienced an increase of 3.8 points, from 5.6 to 9.4, by 2014 (see Appendix D, Tables D.2a-D.2b). In addition, CPC practices had a statistically significantly higher score relative to comparison practices in risk-stratified care management in 2014 (9.7 for CPC practices versus 7.1 for comparison practices); this domain differed more than any other measured in the modified PCMH-A. (See Appendix D, Table D.7a.)

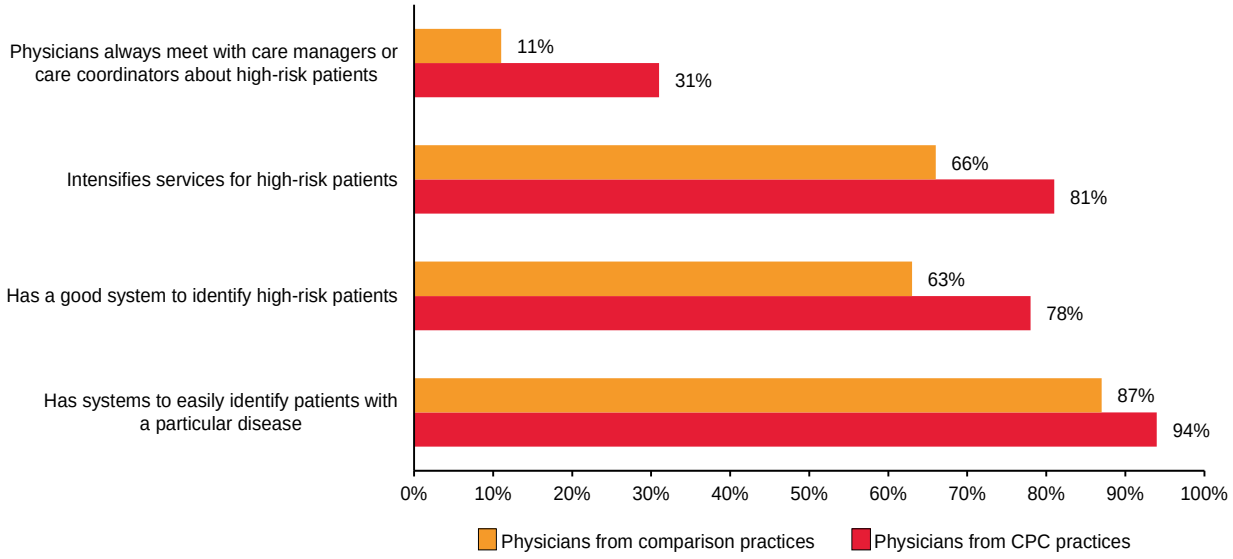
Turning to individual aspects of risk-stratified care management, the percentage of CPC practices that reported that "standard methods or tools to stratify patients by risk level were available, consistently used, and integrated into all aspects of care delivery" in their practice increased from 5 to 60 percent between 2012 and 2014 (see Appendix D, Table D.6a). Comparisons of CPC and comparison practices in 2014 also show substantial differences, with 60 percent of CPC practices, versus 31 percent of comparison practices, using standardized risk-stratification processes (see Appendix D, Table D.8a).

Although physicians in CPC practices reported higher rates than comparison physicians on measures of risk-stratified care management in the clinician survey (Figure 5.3), there remain sizable opportunities for improvement in the CPC practices. For example, only 31 percent of CPC physicians agreed or strongly agreed that they "always" meet with care managers or care coordinators about high-risk patients. Collectively, these findings suggest that, when the survey was administered, some CPC practices had implemented risk-stratified care management activities only partially or only with some physicians. (Few major differences in results emerged across CPC regions, so they are not discussed here.)

Practices devoted more staffing to care management. Although the 2014 practice survey did not collect information on specific types of staff, it does ask if the practice hired or contracted staff to fill new roles or functions since 2012. Eighty-nine percent of CPC practices reported that they had hired or contracted staff to fill new roles or functions, and 62 percent reported that they had moved existing staff to new roles (see Appendix D, Table D.9a). Milestone data indicate that CPC practices have steadily increased the FTE staff dedicated to care management in each year of CPC (CPC Fast Facts Mid-Year Update: Program Year 2014 Year 2).

Practices' care management staff appeared to be somewhat integrated with clinicians about one year into CPC. At that time, in the clinician survey, CPC clinicians were much more likely than comparison clinicians to report that their teams always included care managers or care coordinators (47 versus 17 percent) and registered nurses (42 versus 31 percent) (see Appendix D, Table D.11).

Figure 5.3. Physicians' reported approaches to risk-stratified care management, for CPC and comparison practices



Source: Clinician survey fielded by Mathematica from September 2013 through February 2014, 11 to 16 months after CPC began. This figure includes only primary care physician respondents.

Note: Differences between CPC and comparison practices are all statistically significant at $p < 0.10$.

Practices engage in many activities as part of care management (Table 5.7). According to Milestone data, nearly all practices (99 percent) delivered patient education as part of care management. Other common activities included care plan development and post-discharge contact (reported by more than 90 percent of practices) and transition management, patient coaching, and monitoring (reported by more than 79 percent of practices). Visits to patients in the hospital and home were less common, with about a quarter of practices reporting these activities.

Table 5.7. Percentage of CPC practices performing various care management activities, CPC-wide and by region

Selected care management activities	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Education	99%	98%	99%	100%	97%	100%	100%	96%
Care plan development	94%	97%	96%	91%	85%	100%	92%	96%
Postdischarge contact	93%	87%	89%	99%	91%	93%	97%	96%
Transition management	89%	86%	90%	90%	69%	97%	100%	94%
Patient coaching	84%	73%	85%	87%	72%	100%	83%	91%
Monitoring	79%	76%	92%	91%	72%	55%	84%	88%
Hospital visits	25%	22%	36%	45%	8%	4%	32%	31%
Home visits	22%	21%	44%	22%	20%	3%	5%	36%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Notes: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014. Practices indicated all activities that applied.

Deep-dive findings on care management

Practices continued to report that the care management efforts supported by CPC are a valuable resource for improving patient outcomes for the highest-risk patients. Several practices noted they had been pursuing activities related to care management before CPC, but that CPC encouraged them to approach care management more systematically (for example, to focus on the high-risk patients, to better document their care in the EHR, and to develop streamlined workflows).

Practices of all sizes and ownership types said that they used most of their CPC funding to hire or expand care management staff. Practices clearly preferred to have the care manager on-site to work as part of the primary care team, even if the care manager was part-time. Most small independent practices reported that CPC did not provide enough funds to hire a full-time care manager. A few small practices hired a part-time care manager, gave care management responsibilities to existing staff, or worked with another practice to share a care manager. Practices in rural areas faced challenges hiring sufficiently trained care managers given the limited local workforce supply. Several practices expressed concerns about their ability to keep employing newly hired care managers after CPC funding ends.

Practices were increasingly learning how to incorporate the care manager role. Clinicians in some deep-dive practices were more willing than those in others to refer their high-risk patients to the care manager. In a few practices with CPC physician champions who had embraced the concept of care managers, some were trying to convince their peers of the value of having patients receive extra counseling on chronic condition management from the care managers. During the past year, clinicians' willingness to work with care managers increased. Clinician buy-in to working with nurse care managers also improved as clinicians experienced firsthand how they helped increase patient monitoring and self-management of their conditions and helped relieve clinicians of some of their work. In some practices, work remains to be done to fully engage all clinicians in working closely with care managers.

In general, practices perceived that patients appreciated the extra contact via in-office visits, telephone consultations, and, in a few cases, home visits from the care managers. For example, practices reported that patients appreciated having a clear point of contact at the practice to ask ongoing questions about self-management. They also appreciated connections to community resources provided by care managers.

Deep-dive practices struggled with their role in supporting changes to patients' self-care. Care managers and physicians noted that, for some patients, having a clinician or care manager recommend a behavior change and increased involvement in managing their own care was not sufficient to engage them in behavioral change and self-management support. One physician noted, "It is not something that happens in the first encounter or the 30th encounter. There is some other motivating factor that motivates them to lose weight or get their diabetes under control."

In several deep-dive practices, limitations of current EHRs and care management software posed challenges to communication about care management activities. In one practice, for example, the EHR template used to document telephone interactions with patients was being used as a workaround to record care management, despite not being designed for that purpose. In addition, many EHRs poorly integrated, or did not communicate with, care management software, which hindered care management tasks such as efficient documentation and communication between physicians and care managers.

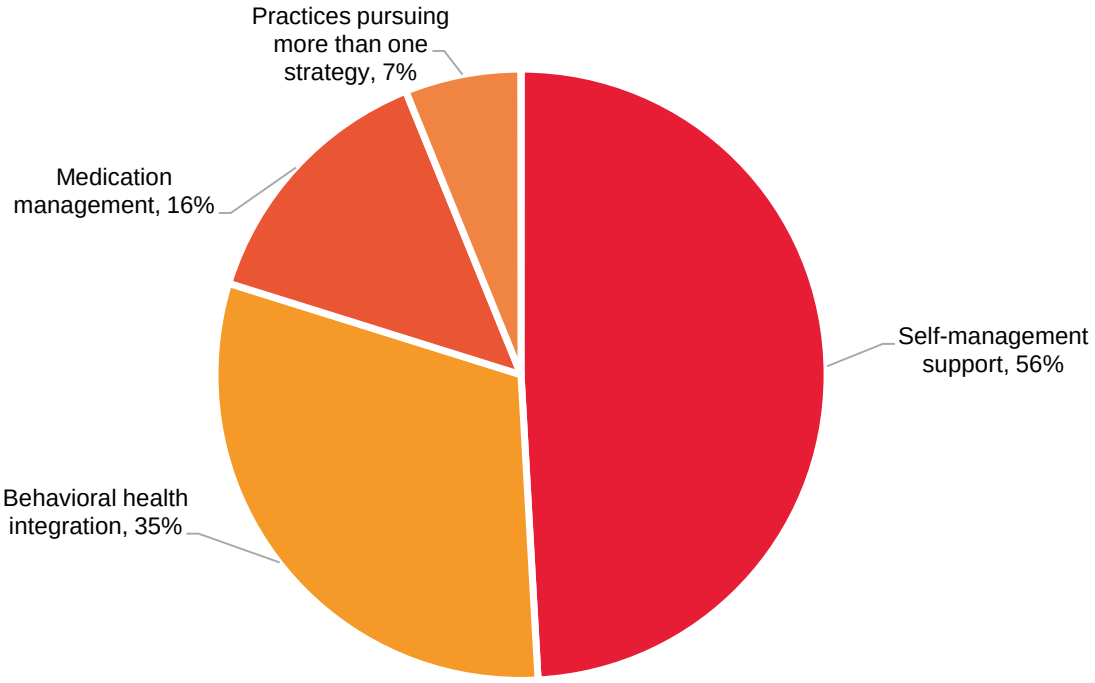
> "If we want to make care plans for patients, they have to have a tool in [the EHR] that allows us to have an ongoing care plan that is flexible so we can change it and track our progress. From my understanding from other clinics and that includes our own EHR, the technology is not there yet."
>
> *—Care manager, system-owned practice*

In a number of practices, EHRs did not support the documentation and tracking required for care management. Some practices described how the limited functionality of their EHR hindered their ability to support dynamic care plans and accommodate patients' multiple chronic conditions into one care plan. EHRs also posed challenges to keeping medication lists up-to-date because they required performing multiple mouse clicks to ensure that discontinued medications were correctly noted in the record.

b.iv. Advanced primary care management strategies.

Early in PY2014, CMS required CPC practices to select one of three advanced primary care management strategies for patients in higher-risk cohorts: (1) patient self-management support, (2) behavioral health integration, or (3) comprehensive medication management (Figure 5.4).

Figure 5.4. Percentage of CPC practices selecting each of the advanced primary care management strategies for Milestone 2 in PY2014



Source: Mathematica analysis of PY2014 Q1 Milestone submission results; data provided by CMMI. Data on this topic were not available for the other quarters of 2014.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014.

Notable regional variation existed in the strategies selected (Table 5.8). Colorado and Oregon practices most commonly selected behavioral health integration, with half of Colorado practices and nearly three-quarters of Oregon practices choosing it. Both of these states have statewide initiatives, separate from CPC, to address behavioral health integration. Practices in those regions also were more likely than practices in other regions to have on-site full- or part-time mental health professionals (behavioral health staff, clinical psychologists, or social workers), as measured by the 2014 practice survey (42 percent of Colorado practices and 55 percent of Oregon practices, versus 12 percent or lower in each of the other five regions). A larger percentage of Oregon practices (43 versus 15 percent or lower in all other regions) also had access to pharmacists or pharmacy technicians. Conversely, few New York practices selected behavioral health integration or comprehensive medication management, which is consistent with the very low percentage of CPC practices in New York (fewer than three percent) having behavioral health specialists or pharmacy staff on-site (see Appendix D, Tables D.9a-D.9b).

Table 5.8. Advanced primary care management strategies selected by CPC practices for Milestone 2 in PY2014 (percentage selecting each)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Self-management support	56%	60%	48%	57%	85%	65%	59%	16%
Behavioral health integration	35%	29%	51%	43%	7%	9%	38%	72%
Medication management	16%	22%	14%	10%	9%	25%	8%	25%
Practices pursuing more than one strategy	7%	10%	12%	6%	1%	1%	5%	13%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q1 Milestone submission results. Data on this topic were not available for the other quarters of 2014.

Patient and caregiver engagement, critical to patient buy-in for self-management support, improved in CPC practices from 2012 to 2014. CPC and comparison practices, however, had similar scores in 2014 of 7.9 and 8.0, respectively (see Appendix D, Table D.7a). Individual measures within this domain improved between 2012 and 2014 among CPC practices, but large opportunities for improvement remain (see Appendix D, Table D.6a). The proportion of CPC practices reporting that they assessed patient and family values and preferences and incorporated them in planning and organizing care increased from 15 to 28 percent. The proportion of these practices reporting that they evaluated patient comprehension of verbal and written materials, used translational services or multilingual staff, and trained staff in health literacy and communication techniques increased from 11 to 23 percent.

Advanced primary care management strategies in deep-dive practices

Nearly all the deep-dive practices had begun implementing at least one of the advanced primary care management strategies at the time of our interviews in summer 2014. Independent practices typically chose a strategy that met one of the following conditions:

- Matched their patients' needs (for example, medication management in practices with a large geriatric population)
- Matched the available resources (for example, access to behavioral health providers and pharmacists)
- Built on and expanded related activities they had begun in their previous PCMH efforts (such as care processes for depression screening and treatment)

In system-affiliated practices, the decision about which strategy to pursue was typically made outside of the practice at the corporate level. That said, most systems allowed practices to develop their own workflows for the chosen strategy, but a few used standardized implementation approaches across multiple practices participating in CPC. In a few system-owned practices, the top-down management style of the larger system challenged practice engagement in this Milestone and led some to view the care management approach as being chosen by corporate leaders, rather than coming from the needs of patients and clinicians in the practice.

For each of the three primary care strategies, access to clinical and support resources (such as behavioral health providers, pharmacists, and care managers) appeared to be key to making improvements. System-owned practices typically had access to more resources to support these care management activities, including guidance on workflows and shared resources (such as clinical and technical support staff) that they had previously not integrated into their work. Access to resources was particularly challenging for smaller practices, which have fewer resources. This is consistent with the Milestone data that self-management support was the most often selected strategy because many smaller practices lacked access to the behavioral health and pharmacist staff to engage in the other two options.

> "For a smaller practice such as ours, it feels burdensome in terms of completing some of the Milestones. For instance, behavioral health integration and medication management—it's difficult to do that or find the funds to hire an in-house behavioral health consultant or a pharmacist."
>
> *—Physician, private practice*

Continuing the work begun in the first program year, **practices have trained staff members in clearly defined care management activities.** Most deep-dive practices assigned care management activities to either a care manager whom they hired or shared with other practices or to a nurse who was already in the practice and whose role changed to focus on care management. To avoid overwhelming their care managers, practices either narrowed the group of patients on whom they focused their high-touch care, or in some practices, engaged other staff—such as medical assistants—to amplify self-management support and screening activities for behavioral health integration. One practice, for example, stratified patients and then assigned the registered nurse care manager to the higher-risk patients with diabetes for self-management support, while the medical assistant focused on more routine education and monitoring for lower-risk patients with diabetes. In another practice, as part of the practice's work on behavioral health integration, the medical assistant at the front desk was trained to introduce patients to the Patient Health Questionnaire-9 to be completed in the waiting room. Physicians then would address symptoms of depression or anxiety during the office visit or refer patients to a behavioral health provider who was typically off-site. These efforts in some of the deep-dive practices helped build team-based approaches to providing care, which supported Milestone implementation.

Several deep-dive practices perceived that their work on behavioral health integration and medication management had strengthened relationships with providers outside of the practice to improve care. Several practices reported that focusing on behavioral health integration has strengthened relationships with behavioral health providers outside of the practice and ensured their patients have consistent and timely access to these services. Practices with access to pharmacists via their affiliation with a hospital system also noted that focusing on medication management has led to more structured working relationships and improvements in the medication reconciliation process after hospitalizations and other care transitions.

5.4.2. Milestone 3: Access and continuity

For Milestone 3 in PY2014, practices were required to enhance access by implementing "at least one type of opportunity for care to be provided outside of office visits."

a. Overview of findings

The second-largest area of transformation was access and continuity. For Milestone 3, patient portals were the option most frequently pursued by practices to enhance access, likely because stage 2 meaningful use incentives emphasized patient portal use as well. Most practices offered patient portals for messaging, but actual day-to-day use of portals was in a very early stage for patients and practice staff because practices had recently adopted portals, many were not user friendly, and new workflows and staff time were needed to respond to patient messages. Because of the meaningful use emphasis on portals, other avenues for enhanced access seemed to have received less attention from practices. Deep-dive and survey data, however, indicate that practices made efforts to improve wait times for patients for appointments, improved telephone access to the practice for patients, and increased after-hours access to clinicians via email, by telephone, or in person.

b. Detailed findings

b.i. Enhanced access activities for all CPC practices

Practices most commonly selected patient portals as their enhanced access activity, with 93 percent of CPC practices providing them (Table 5.9). However, as discussed later in this section, the deep-dive practices suggested that few patients were using the portals. On average, fewer than one-third of practices pursued other methods to expand access.

Table 5.9. Percentage of CPC practices engaging in each type of enhanced access activity, CPC-wide and by region

Selected enhanced access activities	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Patient portal messages	93%	89%	96%	93%	85%	100%	92%	97%
Structured phone visits	32%	54%	10%	31%	38%	32%	40%	21%
Email	19%	21%	22%	28%	20%	16%	14%	18%
Text messaging	12%	16%	5%	13%	19%	15%	8%	9%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014.

Data are reported using verbatim response options from CPC Milestone quarterly reports; there were no response options for after-hours care or same-day visits.

The CPC practice survey, which included items on three of the four forms of enhanced access listed in Table 5.10, identified a substantial increase, from 25 to 62 percent, of CPC practices reporting patient after-hours access to clinicians available via email, by telephone, or in person. This increase may reflect a combination of CPC implementation and other outside influences on access: CPC practices were more likely to report this in 2014 than comparison practices (62 versus 38 percent). The survey also showed a large increase from 7 to 62 percent (from 2012 to 2014) of CPC practices reporting availability of patient communication with the practice team through email, text messaging, or accessing a patient portal. In 2014, 62 percent of CPC practices versus 52 percent of comparison practices reported this type of communication

(see Appendix D, Tables D.6a and D.8a).[50] In the clinician survey, which asked about different aspects of access, CPC and comparison physicians reported similar rates of responding to patient telephone calls and emails to discuss their health issues. About three-quarters of both groups reported always responding to patient telephone calls, but only one-third reported always responding to electronic communications from their patients (see Appendix D, Table D.11).

b.ii. Enhanced access activities in deep-dive practices

Consistent with the Milestone data on the options selected, the enhanced access option that deep-dive practices pursued most frequently was **a patient portal, with practices citing meaningful use stage 2 incentives as a motivator.** The deep-dive practices also implemented various strategies to enhance access for Milestone 3, including expanded office hours, structured telephone visits, same-day appointments, and home or video visits.

As of mid-2014, deep-dive practices ranged in their stages of portal adoption, with most being at an early stage and having few patients enrolled to date. In some cases, practices had not yet heavily promoted the portal to patients because they wanted to better develop a plan for how they would handle resulting emails from patients. In other cases, practices had aggressively tried to enlist patients to register for their portal but had not yet succeeded in getting a sizable proportion to sign up—particularly among low-income patients who lacked computers or internet access and among some older patients who were not comfortable with computers or who lacked computer or internet access. In response, some practices were enlisting patients' caregivers or family members in portal enrollment and use. One practice had installed a kiosk in the waiting room to encourage patients to sign up for the portal, and most practices had enlisted the front-desk staff to help patients enroll. In a couple of practices (which were the exception), more than half of patients had enrolled in the portal; these practices had high uptake in part due to the relatively affluent and younger populations they served, combined with a heavy push by the practice to enlist patients. **Because patient take-up of portals was low to date, we did not expect portals to have greatly improved access (for example, via asynchronous communication) yet.**

The perceived burden of portal implementation for practices varied. In some practices, the patient portal helped simplify practice workflows (for example, by enabling the practice to send reminders about screening to appropriate patients). In others, the workflows for portal implementation were initially challenging because they involved new tasks for front-desk staff when introducing the portal to patients and for other staff members, when they had to manage patients' messages to the practice. To mitigate these challenges, **several practices either hired a dedicated person or altered an existing staff member's role to enroll patients in the portal and manage portal communications.**

[50] The discrepancy between Milestone reports of 93 percent of CPC practices using portals versus 62 percent in the 2014 practice survey is likely a function of differences in wording between the two data sources. In the patient survey, portals were referred to in the "top box" category as part of the PCMH-A item on access, and that item reads as follows: "Communicating with the practice team through email, text messaging or accessing a patient portal is generally available, and patients are regularly asked about their communication preferences for email, text messaging, or use of a patient portal." In other words, the practice survey item combined several concepts and a more demanding measure of portal use, whereas the Milestone reporting requirement simply required a practice to check a box if its enhanced access efforts included patient portal messages.

Practices' perceptions of patient views about the portals varied. A few practices believed that the portal would enhance communication with patients. Some practices said their portal was not user friendly, hampering patient use. Moreover, some patients were not using the portal appropriately (for example, they were using it to send urgent messages); in response, some practices were educating patients about appropriate portal use. Some practices noted that patients liked receiving lab results via the portal.

Practices seemed to focus most on portal implementation, but some pursued additional efforts to enhance patient access. Deep-dive and survey data indicate practices made efforts to improve wait times for patients for appointments, improved telephone access to the practice for patients, and increased after-hours access to clinicians via email, by telephone, or in person. Improving telephone access typically involved increasing staff and the number of telephone lines dedicated to patient calls. In-person after-hours access to clinicians in large systems was often delivered via an urgent care clinic owned by the same system; typically, this clinic existed before CPC.

5.4.3. Milestone 4: Patient experience

For Milestone 4 in PY2014, practices were required to do one of the following: (1) conduct a practice-based patient survey monthly, (2) convene a patient and family advisory council (PFAC) quarterly, or (3) conduct a survey quarterly and convene a PFAC semiannually. These activities built on work in CPC's first year to help practices better understand patient experience with care and incorporate patient perspectives into care delivery.

a. Overview of findings

For Milestone 4, surveys continued to be the most common method used for eliciting patient feedback (73 percent of practices conducted either monthly or quarterly surveys); however, PFAC implementation rose substantially from 20 percent in 2013 to 42 percent in 2014 (Table 5.10). Interviews conducted with practice staff and patients from the six deep-dive practices implementing PFACs indicate that two that had pursued PFACs decided not to do so after implementation challenges (such as finding a time when patients and staff could meet). PFACs were working well in the other four practices, and both practice and patient members reported that the practices were addressing patient feedback and improving care delivery. Challenges for these practices remain, however, including difficulty (1) recruiting patients and scheduling PFAC meetings during times convenient for both practice members and diverse patient members with jobs or child care responsibilities, (2) encouraging patients to share their feedback, and (3) providing summaries of activities initiated by the PFACs with patients.

Table 5.10. Percentage of CPC practices choosing each option to elicit patient experiences, CPC-wide and by region

Activities to elicit patient experiences	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Monthly practice-based survey only	57%	65%	14%	69%	51%	89%	63%	52%
Quarterly PFAC only	26%	30%	49%	15%	32%	7%	11%	37%
Quarterly survey and semi-annual PFAC	16%	5%	37%	16%	16%	4%	25%	10%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014.

PFAC = patient and family advisory council.

b. Detailed findings

b.i. Activities around patient experience in all CPC practices

The proportion of practices that elected to implement a PFAC increased from 20 percent of CPC practices in 2013 to 42 percent in the 2014 Milestone data. PFACs were most common in CPC practices in Colorado and least common in Ohio/Kentucky.

Practice survey results on the use of patient surveys are consistent with the Milestone data. Comparing 2014 to 2012, a higher percentage of CPC practices overall (33 percent in 2014 versus 11 percent in 2012), and in each of the seven regions, said that patient survey data on patient care experiences (for example, from the CAHPS survey) were routinely provided as feedback to practice teams and transparently reported externally to patients, other teams, and external agencies (see Appendix D, Table D.6a). Some of this difference may be due to CPC, and some to other changes affecting practices: 26 percent of comparison practices (versus 33 percent of CPC practices) reported similar results in 2014 (see Appendix D, Table D.8a). The CPC practices also indicated their belief in the importance of collecting and using patient feedback to improve quality of care and patient experience over time. Fifty-four percent of CPC practice survey respondents felt this was "very important" to improving the care it provides patients, and 41 percent felt it was "somewhat important."

For PFACs, the percentage of CPC practices reporting in the practice survey that PFAC feedback is "consistently used to guide practice improvements and measure system performance and practice-level care interactions" (the highest category of response) increased from 16 percent in 2012 to 26 percent in 2014 (see Appendix D, Table D.6a). Thirty percent of all CPC practices in 2014 (versus 19 percent in 2012) reported the next-highest category of response, indicating that they "regularly collected and incorporated PFAC feedback into practice improvements on an ad hoc basis."

b.ii. Activities around patient experience in deep-dive practices

The discussion in this section supplements information collected from the 21 deep-dive practices with qualitative telephone interviews with 10 patients and caregivers from March–April 2015 in the four deep-dive practices that ran PFACs.

Most deep-dive practices continued to survey patients (as they did for this Milestone in PY2013), and several sought or planned to seek feedback via a PFAC. Some practices **noted survey fatigue among their patients,** who regularly receive surveys from the practice, payers, and other organizations. A few practices worried that the relatively small proportion of patients who responded were outliers (that is, more likely to either have complaints or be very happy with the practice) and believed they would get better feedback from face-to-face interactions with patients via a PFAC.

Practice and patient respondents reported favorable experiences with PFACs and felt they helped the practice improve care delivery. Patients reported that practices that have introduced PFACs were using them to seek patient input and were responsive to the feedback, and the patients were generally pleased with their experiences with PFACs. Practice clinicians and staff who participated in PFACs felt they provided more actionable and useful information than patient surveys because they made it possible to probe issues and potential solutions, and, unlike with patient surveys, questions were not left up to patient interpretation. Echoing the sentiment of several clinicians and staff, a practice administrator said, "The patients' perception of the survey questions can be so different than what you think. In one PFAC meeting, we got so much more information by sitting face-to-face with people [than we did by looking at survey results]."

Practices recruited PFAC members through several avenues, most commonly by staff member nomination, with an eye to convening a diverse group of patients who would be invested in the committee and work effectively as a team. Another strategy was directly advertising for PFAC members through flyers. Although some practices' patients were enthusiastic about participating, other practices had difficulty recruiting patients. One practice used recruitment materials and incentives such as gift cards to enhance participation. A few practices described **challenges in scheduling PFAC meetings during times convenient for nonelderly patients who work or those with child care responsibilities, which limited PFAC diversity.**

Practice and patient respondents cited **specific examples of how (in their opinion) PFAC feedback had improved care.** These included getting timely appointments, reducing wait times, involving patients in revising intake forms and health risk assessments, and ensuring that practice staff greeted patients in a timely and welcoming manner. A few practice members also noted that patients had advised them on making their patient portals more user friendly. Because most PFACs only had a few meetings, however, patients and practice members noted that it will take more time to gauge their effectiveness. Moreover, PFACs were one of many patient-centered activities that practices were pursuing; therefore, some of the changes patients attributed to the PFACs may have come through other means.

As expected, because most practices were launching PFACs for the first time, there are areas for improvement. These include:

- **Increasing the number and diversity of patient participants.** Strategies may include reaching out to patients from different age groups and ethnicities and holding PFAC meetings at different times to accommodate patients' varied schedules.

- **Orienting patients to their roles.** About half the patients indicated that they received no orientation to the PFAC. Although some patients did not think an orientation was necessary, it could help clarify roles and expectations.
- **Providing meeting agendas and other materials in advance.** PFACs differed in how they developed and distributed meeting agendas and materials. About half the patients indicated they received an agenda before upcoming meetings. A few also received other materials to review before the meetings. Although no one complained about not having an agenda in advance, patients who received an agenda in advance found it helpful.
- **Taking steps to address the reticence of some patients to raise issues.** Patients may not be comfortable voicing concerns or complaints in front of providers, especially when their concerns may be critical of providers or the practice. PFACs should consider ways to overcome this patient self-censoring and encourage their feedback, such as making their role clear during orientation, allowing patients to submit items for the agenda in advance (and to do so anonymously), using icebreaker activities to build rapport among patients and providers, and giving them examples of the topics discussed by other PFACs.

Several deep-dive practices noted that they made changes based on patient survey feedback similar to those described in connection with PFACs. Practices used survey feedback to improve patient access by telephone, reduce wait times, and contact patients more consistently to report normal and abnormal lab results. As a result of adding telephone lines in response to survey feedback, one practice reported seeing an improvement in access-related survey scores.

Practice communication with patients on the results of the patient survey or PFAC and any resulting practice changes was mixed. A few practices described methods they used to communicate feedback to patients, including placing posters in the practice, putting information on the practice's website, and having a briefing in the PFAC. Other practices indicated they were not communicating feedback from their patient survey to patients, despite the Milestone requiring it.

5.4.4. Milestone 5: Use data to guide quality improvement

To fulfill Milestone 5 requirements for PY2014, CPC practices had to identify the frequency with which they track EHR-based clinical quality measures (eCQMs) from the CPC set (that is, weekly, monthly, quarterly) and provide panel (provider or care team) reports on at least three measures at least quarterly to support improvements in care. Practices also had to indicate the three measures for which they chose to pursue quality improvement activities. As of summer 2014, most practices had identified at least three eCQMs and were reviewing them regularly, which CPC practice team members felt was helping to improve care. (Chapter 3 discusses use of Medicare feedback reports, which include claims and survey-based measures, for quality improvement.)

a. Overview of findings

Practice and clinician surveys both suggest CPC practices have increased their focus on quality improvement and have slightly better scores on their QI orientation than comparison practices. Nonetheless, there is considerable room for improvement. CPC physicians' responses to a broad range of quality improvement activities emphasized in the clinician survey suggest gaps in practice approaches to quality improvement, particularly in articulating goals, exchanging relevant information in the practice for quality improvement as it becomes available, talking openly about improvement successes and failures, clinicians and staff monitoring one another's performance, actively seeking improvement opportunities, and troubleshooting problems. Several deep-dive practices noted that tracking eCQMs is helping them organize and maintain a focus on quality improvement, including tracking and following up on preventive services. Tracking eCQMs helped practices more efficiently organize care around condition-specific needs, particularly for high-risk patients. The reporting requirements for this Milestone, specifically regarding development of consistent data documentation in the EHR and processes for reporting, often were cited as a time-consuming and resource-intensive activity by deep-dive respondents. Considering all the other work they had to do for the other Milestones, the eCQM reporting and other CPC quarterly reporting requirements seemed to be a heavy burden, even for large practices with IT staff.

Practices that used teamwork, including clear roles and delegation of tasks, found Milestone 5 easier to implement than those that did not; some practices also noted that pursuit of Milestone 5 encouraged them to use more teamwork. Deep-dive practices indicated that teamwork is needed to report and act on eCQMs in a way that improves care processes. The helpfulness of teamwork in achieving Milestone 5 is also supported by the finding from the clinician survey that CPC practices used a greater variety of staff types for data-guided quality improvement than did comparison practices.

b. Detailed findings

For Milestone 5, practices had to report 9 out of 11 eCQMs, but then chose three measures on which to focus their quality improvement activities. According to the Milestone data, the most common eCQMs that CPC practices selected for quality improvement were (1) hemoglobin A1c poor control for diabetes (also the most commonly reported eCQM in 2013), (2) controlling high blood pressure, and (3) colorectal cancer screening (Table 5.11).

Table 5.11. Percentage of eCQMs that CPC practices selected for quality improvement activities, CPC-wide and by region

eCQM	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Hemoglobin A1c poor control for diabetes	77%	76%	84%	66%	78%	95%	60%	79%
Controlling high blood pressure	60%	38%	51%	55%	72%	77%	68%	54%
Colorectal cancer screening	55%	71%	45%	63%	57%	8%	68%	81%
Breast cancer screening	46%	57%	40%	51%	50%	23%	51%	57%
Tobacco cessation screening	44%	52%	40%	51%	45%	12%	67%	45%
Diabetes LDL management	43%	38%	60%	37%	30%	40%	40%	57%
Influenza immunization	29%	40%	14%	40%	32%	15%	33%	33%
Depression screening	23%	17%	14%	21%	20%	31%	17%	43%
Falls screening	21%	22%	26%	18%	20%	33%	8%	13%
Ischemic vascular disease	16%	19%	19%	10%	12%	21%	6%	22%
Heart failure	11%	25%	5%	3%	11%	1%	11%	19%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014. Because practices had to identify at least three eCQMs, these percentages are not mutually exclusive.

eCQM = electronic clinical quality measure.

b.i. General efforts at quality improvement

Milestone 5 is intended to help practices systematically use data to drive quality improvement. In PY2014, the CPC quarterly Milestone reporting requirements focused on (1) how often practices review eCQMs, (2) who in the practice makes the EHR data available to the team, (3) how often they create eCQM panel- or provider-specific reports, and (4) which CPC eCQMs are being reviewed at least quarterly. The Milestone reporting requirements placed less emphasis on reporting about quality improvement (QI) processes (for example, the use of plan-do-study-act cycles). The modified PCMH-A and clinician surveys, on the other hand, focus not only on the use of data to guide QI, but also on staffing, resources, and processes for QI. These different emphases may contribute to the modest improvements in QI orientation observed in the practice and clinician surveys. In general quality improvement efforts, there is likely considerable room for further improvement. Practice survey responses to the PCMH-A domain on "continuous improvement driven by data" increased 2.3 points, from 5.7 to 8.0 from 2012 to 2014 (see Appendix D, Table D.2a) and are higher than comparison practices (which were at 7.2) (see Appendix D, Table D.7a). Changes to individual measures within this domain show some improvement between 2012 and 2014 but also substantial room for continued improvement (see Appendix D, Table D.6a):

- CPC practices reporting that QI activities were conducted by practice teams supported by QI infrastructure with meaningful involvement of patients and families increased from 6 to 19 percent.

- CPC practices reporting that performance measures were comprehensive, available for practice and individual providers, and fed back to individual providers increased from 36 to 65 percent.
- CPC practices reporting that staff, resources, and time for QI activities were fully available increased from 5 to 18 percent.
- CPC practices reporting that hiring and training processes supported and sustained improvements in care through training and incentives focused on rewarding patient-centered care increased from 11 to 21 percent.
- CPC practices reporting that all staff shared responsibility for conducting QI activities, reflecting more teamwork, increased from 15 to 37 percent.

Physician survey responses paint a similar picture of more focus on QI in CPC practices than in comparison practices, with continued opportunities for improvement. For example, compared to comparison physicians, CPC physicians more often "strongly agreed" that their practices have made changes in "how it takes initiative to improve patient care" (36 versus 14 percent, respectively) and in "how it does business" (20 versus 13 percent) during the first year of the CPC initiative (see Appendix D, Table D.11). Furthermore, there was no difference between CPC and comparison physicians in reported involvement of staff and clinicians in developing plans for improving quality. CPC practices did use a greater variety of staff types for data-guided quality improvement than did comparison practices, suggesting more teamwork.

CPC physicians are also more likely than comparison physicians to report that their practice has a learning atmosphere. This was true for questions about learning from other team members, group learning, and reciprocal knowledge sharing. However, there is still opportunity for improvement in reciprocal learning activities. For example, 65 percent of CPC physicians versus 56 percent of comparison physicians either agreed or strongly agreed with the statement that they are "frequently taught new things by other people" in their practice.

In addition, CPC and comparison physicians reported comparable responses to the following statements, indicating opportunities for improvement:

- The practice has clearly articulated goals.
- The practice exchanges relevant information as it becomes available.
- The staff talk openly about improvement successes and failures.
- The staff monitors each other's performance.
- The staff actively seeks improvement opportunities.
- Their teams made serious efforts to troubleshoot problems.
- The practice operates at a high level of efficiency.

b.ii. Quality improvement and eCQM reporting in deep-dive practices

For some system-affiliated deep-dive practices, the eCQMs were identified at the system level, whereas other system-affiliated practices selected theirs independently. Some practices indicated that their selected eCQMs aligned with their selected care management strategy to fulfill Milestone 2, particularly self-management support.

Several deep-dive practices had been tracking and reviewing eCQMs before CPC. A few of these practices chose eCQMs that they were already measuring or that aligned with those measures used in other initiatives in which they were participating. Other practices selected eCQMs for which they had already established quality improvement processes and therefore did not perceive that a change to practice workflows was necessary as a result of this Milestone.

As a result of tracking eCQMs, several practices described adopting a more proactive, population-based approach to care, particularly for patients with chronic conditions. This approach involved reviewing the status of certain eCQMs for the practice's entire patient panel to identify areas for improvement. These practices described an increase in previsit planning and patient outreach between visits. For example, these practices took the following steps:

- Requested that patients with certain chronic conditions complete testing before scheduled appointments
- Reconciled patients' medications before the visit (for patients on multiple medications)
- Regularly contacted patients with a hemoglobin A1c value above a certain level

Several deep-dive practices were experiencing challenges reporting eCQMs from their EHRs. Several practice staff described efforts to overcome these reporting challenges as time-consuming. Some of these challenges were a result of limited EHR functionality, and a few practices perceived insufficient support from their EHR vendor. Some challenges with eCQM reporting were a result of practices not entering information or not being able to import information (such as diagnostic test results) into their EHR in a standardized data format that supports eCQM reporting. The process was going well in a couple of practices that were part of large systems that had access to a clinical data warehouse registry within their EHR; from this registry, practices could generate ongoing and timely physician- and practice-level reports to monitor certain eCQMs and identify gaps in patient care.

The reporting requirements for this Milestone, specifically regarding development of consistent data documentation in the EHR and the processes for reporting, were often cited as a time-consuming and resource-intensive activity for clinicians in deep-dive practices. Considering all the other work they had to do for the other Milestones, practices—including large ones with robust IT staff—considered the eCQM reporting and other CPC quarterly reporting requirements to be a heavy burden. This is another instance in which strong leadership within a practice was necessary to convince clinicians and staff of the value of taking the extra time required for EHR documentation.

Tracking eCQMs helped several deep-dive practices organize and maintain a focus on quality improvement. Several practices reported that they were improving tracking and following up on preventive services, thus improving patient care. Tracking eCQMs helped

practices more efficiently organize care around condition-specific needs, particularly for high-risk patients. Practices talked about the **importance of the care manager's role in helping practices stay focused on quality improvement efforts, particularly for high-risk patients.**

> "Our initial forays into [quality improvement] were very physician-centric and used paper metrics, and as a result, we had limited capabilities. We could take on hypertension, osteoporosis, diabetes, and that was about it, because at that point you get overwhelmed pretty quickly. Now I think we are seeing our first significant attempts at team management, in a way that is truly meaningful for patients and physicians. That's a big change."
>
> *—Lead physician, private practice*

Some practices noted how they came together as a team to reach eCQM goals. These practices kept staff focused by sharing progress on eCQMs with one another during staff meetings or by posting the information on the practice intranet or in common areas in the practice. Practices also described role delegation (for example, training medical assistants to conduct foot examinations on patients with diabetes and take blood pressure readings), which they said resulted in measurable improvements in eCQM performance. A few practices noted that tracking and working to improve eCQMs was facilitating a paradigm shift from a physician-centered delivery model to a team-based model.

5.4.5. Milestone 6: Care coordination across the medical neighborhood

To fulfill the requirements for Milestone 6 for PY2014, practices selected two of the following three options to improve coordination and transitions of care:

- Timely follow-up with patients after ED visits (within one week)
- Timely follow-up with patients after hospitalizations (within 72 hours after discharge)
- Enactment of care compacts[51] or collaborative agreements with at least two groups of high-volume specialists

a. Overview of findings

For Milestone 6, CPC practices made progress from 2012 to 2014 on the care coordination functions of follow-up after ED visits and hospital discharges as measured by the Milestone data and the practice and clinician surveys, but they still had opportunities for improvement. Findings from the deep-dive interviews also indicated that many practices refined workflows and entered into agreements with hospitals to which they most frequently admitted patients to obtain discharge data and contact patients promptly. CPC practices were more likely than comparison practices (64 versus 49 percent) to report that they conducted routine follow-ups with patients seen in EDs or hospitals because of established arrangements with the ED or hospital to track patients and ensure follow-up within a few days (see Appendix D, Table D.8a).

Considerable room for improvement remains in the area of care compacts with specialists. Not only was use of care compacts with most medical and surgical specialists very low among CPC practices in most regions, but it also was lower for CPC practices than comparison practices (19 versus 41 percent) in 2014, based on the practice survey. This difference does not appear to

[51] Care compacts and agreements outline primary care and specialists' respective responsibilities in care for patients and establish a process for reliable exchange of clinical data and communication for referrals and consultations.

be driven by differences in electronic data exchange with outside providers, because only a quarter of both CPC and comparison practices reported routinely transferring electronic data to outside providers. Like practices nationwide, CPC practices have substantial opportunities to improve how they coordinate and exchange information with specialists.

b. Detailed findings

b.i. Care coordination for all CPC practices

Hospital discharge and ED follow-up continued to be the leading care coordination activities that CPC practices chose for Milestone 6 (Table 5.12). Only 15 percent of practices elected to use care compacts or collaborative agreements with specialists, although this ranged from a high of 31 percent in Oklahoma to a low of 1 percent in New Jersey.

Table 5.12. Percentage of CPC practices choosing each care coordination activity, CPC-wide and by region

Care coordination activities chosen	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
ED follow-up	89%	94%	86%	85%	97%	99%	64%	96%
Hospital discharge follow-up	96%	100%	92%	94%	88%	100%	100%	100%
Care compacts/collaborative agreements with specialists	15%	6%	22%	21%	15%	1%	31%	4%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q1 Milestone submission results. Note that this was the most recent data available from CMMI.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014.

ED = emergency department.

Results from the practice survey suggest practices increased their care coordination activities over time, consistent with Milestone 6, but still had room for improvement. The practice survey score for the PCMH-A domain of coordination of care across the medical neighborhood increased from 6.7 to 8.1 from 2012 to 2014 (see Appendix D, Table D.2a). The percentage of CPC practices reporting the most favorable category response increased sizably on several items in the coordination domain. The percentage of CPC practices reporting the following activities increased (see Appendix D, Table D.6a):

- From 26 to 64 percent on following up with patients seen in the ED or hospital routinely because the practice has arrangements with the ED and hospital to track patients and ensure follow-up is completed within a few days
- From 14 to 35 percent on consistent receipt of information on patients from community hospitals and EDs within 24 hours after the event
- From 35 to 48 percent that patients who needed specialty care, hospital care, or supportive community-based resources obtained needed referrals to partners with whom the practice had a relationship, that relevant information was communicated in advance, and that there was timely follow-up after the visit

- From 37 to 61 percent on consistent and complete transmission of patient information when patients are referred to other providers
- From 7 to 30 percent on reporting patients were linked to supportive community-based resources through active coordination between the health system, community service agencies, and patients, and accomplished by a designated staff person

CPC and comparison practices had comparable scores of 8.0 in the overall domain of coordination of care across the medical neighborhood on the 2014 practice survey (see Appendix D, Table D.7a). However, a higher proportion of CPC than comparison practices (64 versus 49 percent) reported that they conducted routine follow-ups with patients seen in EDs or hospitals because of established arrangements with them to track patients and ensure timely follow-up (see Appendix D, Table D.8a).

CPC practices, however, had statistically unfavorable differences relative to comparison practices on some care coordination measures within the care coordination domain. CPC practices, on average, were statistically significantly *less likely* than comparison practices to:

- Have formal relationships with *most* other practices and providers of medical care (19 percent of CPC versus 41 percent of comparison practices)
- Obtain timely receipt of information on *all* patients after they visit specialists in the community (11 versus 19 percent)

We cannot determine whether these differences were caused by CPC or by some other unmeasured factor.

About half of both CPC and comparison physicians surveyed reported that poor access to specialists and communication issues were barriers to patient-centered care. The ability of EHRs and electronic information exchange to help CPC teams communicate with specialists and external providers is also limited. Fewer than one-quarter of CPC and comparison physicians reported routinely transferring electronic data to outside providers (see Appendix D, Table D.11).

b.ii. Care coordination in deep-dive practices

Practice respondents almost universally felt that Milestone 6 was important, particularly timely follow-up after ED visits and hospital discharges. Most deep-dive practices had established internal processes to track and follow up with patients after acute hospitalizations. However, **many continued to face challenges obtaining timely information from EDs and hospitals after patient discharge.** This was particularly true for hospitals to which they admitted patients less frequently or with whom they did not have affiliations. Several practices described **office staff and care coordinators as important resources for overcoming these challenges.**

Care transitions after hospitalizations and follow-up after ED visits. Several deep-dive practices dedicate staff time to contacting patients after an ED visit or hospital discharge. Some of these practices described how **they improved care transition workflows by organizing staff to gather patient information from the ED or hospital after patient discharge.** In other

practices, the integration of care transition tasks into the care manager's role facilitated medication reconciliation and patient education about the appropriate use of the ED during follow-up telephone calls. For ED visits, a telephone follow-up was often sufficient, whereas for hospital discharges, a follow-up visit to the primary care office was also scheduled. Most practices described tracking care transitions to ensure timely patient follow-up by maintaining logs—typically created in Microsoft Excel—in which a practice staff member manually entered date of discharge, date of telephone follow-up, and date of follow-up appointment. A few practices described a tracking process that was integrated into the EHR.

Deep-dive practices were refining workflows to facilitate follow-up after ED visits and hospitalizations. However, they described challenges in obtaining information from EDs and hospitals as resulting from a lack of cooperation from hospitals, lack of interoperable systems, and hospital census reports that are time-consuming to sort through to identify admitted and discharged patients. If discharge information was obtained, many practices had to dedicate staff time to manually enter the ED and hospital information into their EHR.

On the other hand, **some practices were proactively developing relationships with hospitals, resulting in hospitals systematically sending patient discharge information to the practice,** electronically or via fax. A few practices described other factors supporting the development of relationships with hospitals, including plans for the practices and hospitals to use the same EHR (more likely to happen if they were part of the same system), future health information exchange initiatives, health system efforts to improve care coordination, and hospital participation in an ACO. Regions with more robust health information exchanges or prior initiatives that developed HIT capabilities across providers seem better positioned to coordinate care across settings.

Practices that admitted patients to a single hospital found care transition workflows (such as getting systematic notification of discharges) more manageable. Conversely, practices whose patients tended to go to more than one hospital found it challenging to establish care transition workflows because they did not interact as frequently with each hospital and thus did not have strong working relationships with those hospitals. From the practices' perspective, these hospitals did not get enough revenue from these practices to motivate them to invest in developing systematic notification processes with the practices.

Staff in some deep-dive practices described challenges contacting patients after discharge and getting them to come into the practice for a follow-up visit. A few practices reported that some patients do not answer their telephones or return calls from the practice. A few practices described challenges to providing timely follow-up to patients discharged on a Friday because they would not attempt to contact the patient until the following Monday. On the other hand, a few practices noted that patients appreciated the care transition telephone call and the personal connection it facilitates.

Collaborative agreements with specialists. At the time of our summer 2014 interviews, some practices had established care compacts or collaborative agreements with at least two specialty groups; a number of practices, however, were still working on doing so. Practices that established collaborative agreements with specialists described the specialists as being receptive to the agreements. These practices approached specialists to whom they commonly referred

patients (such as gastroenterologists), with whom they had good relationships, and who—for the most part—were in the same health system and using the same EHR. In most cases, **face-to-face meetings to discuss the collaborative agreements facilitated primary care and specialist providers' commitment to the agreements.** In one case, the system-level IT support team worked with staff from primary care and specialist practices to develop EHR functionality to support the agreement. In another case, the primary care practice gave the participating specialists access to its EHR.

5.4.6. Milestone 7: Shared decision making

To fulfill the requirements for Milestone 7 for PY2014, practices must implement PDAs to support shared decision making between providers and patients for two preference-sensitive conditions.

a. Overview of findings

For Milestone 7, CPC practices were making slow progress in implementing shared decision making. There is clearly room for improvement in this area in (1) providers understanding the concept of preference-sensitive conditions, (2) development of care processes to provide shared decision making in a way that does not overwhelm clinicians, and (3) refining the ability to track shared decision making in EHRs. Deep-dive findings suggest practices that involved multiple staff members (that is, used teamwork) in engaging patients in shared decision making found Milestone 7 more manageable.

b. Detailed findings

b.i. Shared decision making for all CPC practices

The top five conditions that practices selected for shared decision making were (1) colorectal cancer screening, (2) prostate specific antigen (PSA) test for prostate cancer screening, (3) tobacco cessation, (4) diabetes medication, and (5) antibiotic overuse for upper respiratory infection (Table 5.13).

Table 5.13. Most common shared decision making topics chosen by CPC practices as of quarter 4, 2014

Shared decision making topic	Percent of practices
Colon cancer screening	39
PSA for prostate cancer screening	31
Tobacco cessation	26
Diabetes medication	20
Antibiotic overuse for URI	12
Care preferences over the life continuum	11
Management of anxiety or depression	10
Management of acute low back pain (no red flags)	10
Breast cancer screening	8
Statin/aspirin	7

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Notes: All 482 practices reported on their choice of shared decision-making topics. Practices each chose between two and six shared decision-making topics.

PSA = prostate specific antigen; URI = upper respiratory infection.

Milestone data illustrate that the organizations from which CPC practices most commonly obtained PDAs for shared decision making include Healthwise, Mayo Clinic, Centers for Disease Control and Prevention, the Agency for Healthcare Research and Quality, and the Informed Medical Decision Making Foundation.

Information from the practice survey sheds some light on CPC practices' work on shared decision making. From 2012 to 2014, the proportion of CPC practices reporting that practice teams trained in decision-making techniques systematically supported involving patients in decision making and care increased from 15 to 27 percent (see Appendix D, Table D.6a). In the 2014 practice survey, we added an item on PDAs, and 42 percent of CPC practices (versus 23 percent of comparison practices) said that PDAs were used to help patients and providers jointly decide on treatment options "consistently" for patients for two or more clinical conditions and tracked with run charts or other measures (see Appendix D, Table D.8a). Still, there is clearly room for increased practice use of shared decision making.

b.ii. Shared decision making in deep-dive practices

At the time of our interviews in summer 2014, most practices had advanced from planning shared decision making to implementing it. Similar to the results among all CPC practices, the most common shared decision-making topics selected by deep-dive practices to fulfill Milestone 7 requirements included PSA screening, colorectal cancer screening, tobacco cessation, and low back pain management.

System-owned practices were generally instructed by their systems on which shared decision-making topics to pursue. In several of these practices, however, **practice staff were involved in the selection of PDAs and workflow redesign and were given tools and training by the larger organization, which they found helpful.** In a couple of system-owned practices, staff felt slighted when their larger organization did not include them in decisions about which shared decision-making topics to use or how to alter their workflow to incorporate the PDAs. Independent practices chose their own shared decision-making topics, primarily based on their perceptions of patients' needs.

> "Our organization mandated all the [primary care] docs have some training [on end-of-life shared decision making]. We met with two palliative care doctors and they presented scenarios for talking about bad news with patients. It was really good, I learned a lot. I know that everyone who was there got something out of it. I think our physicians now have a lot more comfort in discussing these issues before it's too late."
>
> *—Physician, system-owned practice*

A number of deep-dive practices still do not understand the concept of shared decision making for preference-sensitive conditions. Capturing the sentiment of some respondents, a CPC coordinator for a health system noted that providers "do not seem to fully understand the concept" of shared decision making as defined by CPC. A lead physician in another practice offloaded work for this Milestone to a nurse administrator, saying "I just don't get it." The main area of confusion for some practices was not understanding the difference between general patient education for conditions for which treatment options have a strong evidence base (for example, management of hypertension, immunizations) versus preference-sensitive conditions for which different management options exist and patient preference should play more of a role in determining which treatment to pursue. Given the efforts CMMI has made to explain this concept via webinars, action groups, and other resources, a better understanding of preference-sensitive conditions may require a shift in the culture and incentives of providers.

Practices obtained PDAs from online searches, their larger corporate organization, RLF, or professional societies, including the American Academy of Family Physicians. A few practices were using decision aids from sources that would not typically be considered neutral scientific organizations. For example, a couple of practices used tools from pharmaceutical companies (which the practices felt were not biased). One practice used a tool it designed on options for sleep apnea (not a CMMI-approved preference-sensitive condition). Most practices either customized existing paper PDAs from other organizations or websites or used them in their original form. Some practices also used posters, videos, interactive web-based tools, and other visual aids from these same sources. Practices tended to choose free or low-cost PDAs. One practice expressed an interest in interactive web-based tools from the Dartmouth Hitchcock Center for Shared Decision Making but noted they were too expensive to purchase.

Some practices struggled with identifying which patients to target for particular shared decision-making topics such as end-of-life care. Some practices initially took a population-based approach to identifying appropriate patients (for example, all patients age 50 and older due for colorectal cancer screening) and sent out mailings, only to observe a lack of response among the patients contacted. These and other practices also tried targeting more narrowly defined patient subgroups (such as those older than age 50 who were coming in for an appointment in the next few months). Qualitatively, they noted that more intensive personal outreach to that smaller group seemed to better engage patients. Other practices addressed the need for shared decision making on a case-by-case basis during patient visits.

Practices that involved multiple staff members in engaging patients in shared decision making found the work more manageable. Medical assistants, nurses, and physicians identified patients with a preference-sensitive condition for whom shared decision making might be relevant. In some cases, they asked the front desk to hand the patient the relevant PDA; the medical assistant or nurse then would review the PDA with patients either before or after the physician visit, depending on the topic. For more clinically complex topics, or where patients seemed to indicate a preference for discussion with the physician (including PSA screening, depression management, and management of heart failure), physicians led the shared decision-making discussion with the patient. The few physicians who have the sole responsibility of carrying out the shared decision-making process within their practice felt overwhelmed by this Milestone.

Despite integrating shared decision making into practice workflows, some practices perceived the biggest challenge to shared decision-making implementation to be the uncompensated time they believed it requires of clinicians and staff. A care management director expressed concern about future expectations for CPC practices to continually add new shared decision-making tools because of the time and effort required to integrate them into workflows.

Several practices struggled to record and track the use of PDAs in their EHR. After identifying a workflow for shared decision making, practices had to figure out how to document that discussion and find an appropriate place to document it in the EHR for general tracking and future CPC reporting. Several practices had not accomplished this even with the help of their IT departments. As a practice lead noted, “That has been the hardest Milestone to incorporate into our usual workflow.”

Several deep-dive practices believed that patients reacted positively to the PDAs, yet some believed that patients did not engage in shared decision making. Practices perceived that patients did not take the time to review PDAs, particularly for "uncomfortable topics" such as end-of-life care or because they held a more traditional view of health care, preferring to rely on the provider's recommendation for decisions about treatment options. A few practices focusing on PSA screening reported that some of their patients felt the tool was an effort by insurance companies to save money.

5.4.7. Milestone 8: Participation in the CPC learning collaborative

To fulfill the requirements for Milestone 8 in PY2014, practices were required to participate in all-day regional learning sessions, attend webinars, contribute to the CPC collaboration website, and engage with the RLF to facilitate their transformation efforts.

a. Overview of findings

For Milestone 8, CPC practices seem to be generally satisfied with the RLF activities in most regions, and they seem to particularly value individualized assistance and peer-to-peer learning opportunities. However, RLF were not able to directly reach some system-owned practices. Twelve percent of practices report that the RLF only communicated with the practices' larger systems or groups (see Appendix D, Table D.10). Deep-dive data highlight that, when larger systems prevented the RLF from communicating directly with on-the-ground clinicians and staff at the practice level, there was a missed opportunity for assistance with Milestone implementation and ability for RLF to observe and provide feedback on implementing the CPC functions.

b. Detailed findings

b.i. Learning activities in all CPC practices

Participation in learning activities was high throughout CPC practices, as self-reported by CPC practices in Milestone 8 data from PY2014, quarter 4 (Table 5.14).

RLF have had a hard time reaching some practices that are part of systems. In the 2014 practice survey, 88 percent of CPC practices reported that the RLF communicated with practice staff alone or with a combination of practice staff and the larger systems or group. However, 12 percent of practices reported that RLF communicated only with the practices' larger systems or groups and not directly with the practice site. There was regional variation. Arkansas, Colorado, and New Jersey had the highest percentage of practices reporting direct interaction with their RLF. New York had the highest percentage of practices where faculty only interacted with people at the system level. Ohio/Kentucky, Oklahoma, and Oregon had the highest percentages of practices reporting that RLF interacted with both the larger system level and the practice level (see Appendix D, Table D.10).

Practice interactions with RLF were frequent. Most practices reported weekly (37 percent) or monthly (45 percent) communication with RLF. On average, practices reported receiving direct support from RLF (through meetings at the practice, coaching, or other direct assistance) 10 times in the previous six months. There was regional variation in the average number of times

practices reported receiving direct support from RLF, from a low of 4.5 times in the previous six months in Ohio/Kentucky to a high of 21 times in Colorado.

Table 5.14. Participation in CPC learning collaborative by CPC practices, CPC-wide and by region

Learning activity	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Participated in all three all-day CPC learning sessions in their region	99%	94%	100%	100%	100%	100%	100%	100%
Participated in at least one learning webinar per month	94%	89%	97%	99%	81%	100%	95%	97%
Number of practices	482	63	73	67	74	75	63	67

Source: Mathematica analysis of PY2014 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014.

CPC practices gave high ratings to the RLFs' ability to meet their CPC-related needs: 37 percent rated the RLF's ability as excellent, 33 percent as very good, and 22 percent as good. The percentage of practices giving an excellent rating varied by region, from a low of 16 percent in Oklahoma to a high of more than 60 percent in Colorado and New Jersey. Despite the variation in the intensity of interactions with RLF, 90 percent of practices reported that they did not want additional assistance from the RLF beyond what they currently received, with little variation across regions.

The 2014 practice survey also asked about **learning activities and technical assistance received** over the prior six months **from other sources** than national CPC activities and RLFs. More than 70 percent of CPC practices reported receiving learning activities or technical assistance from other (non-Medicare) participating CPC payers and other practices outside of their health care system or medical group.

b.ii. Learning activities in deep-dive practices

Deep-dive practices reported that peer-to-peer exchanges were more helpful than other shared learning activities in the learning collaborative. Practices found that these exchanges facilitated identification of tools, resources, and strategies to implement changes. Practice staff perceived that in-person learning sessions were the most effective way to promote peer-to-peer learning, but webinars and the CPC collaboration website also helped to connect practices. Compared to PY2013, CPC practices felt that sharing of best practices occurred more often through peer networks rather than coming directly from the RLF. Some practices developed relationships with other CPC practices for ongoing support outside of the formal learning collaborative activities; they exchanged emails, held meetings, or hosted other practices to make presentations of lessons they had learned. However, one practice noted that meeting without the presence of the RLF could also be a challenge, because there was no one to serve as a referee to clarify information and redirect conversations when needed.

Practices benefited from increasingly tailored and focused activities to guide them in making specific CPC-related changes, rather than conceptual or general information directed to all CPC practices. RLF made several improvements in what was offered, including forming breakout sessions focusing on an individual Milestone or strategy during regional learning sessions, staging webinars led by CPC practice staff members, and providing written case studies describing practices' approaches. These focused activities helped deep-dive practices, for example, discover new PDAs and to understand care manager roles. Practices appreciated the RLF asking for feedback and making adjustments based on that input, which helped focus learning activities on practices' needs. Action groups were just beginning at the time of our interviews, so practices could not comment on their experiences with that approach, which is intended to further focus efforts on specific topics. Many practices appreciated concrete guidance on practice change from CMMI's Implementation and Reporting Guide and from RLF. However, a few deep-dive practices noted that they do not want to be forced to carry out overly prescriptive care processes that do not meet the local population's needs or their practice's culture and staffing.

> "When we first started, [the lead physician] didn't find a lot of value in [regional learning sessions]. [But] as of the last one, he came back very excited with a list of things that he wanted us to look into. They had a session about high-risk meds and the elderly. So it spoke to him and his practice. So he came back and wanted certain tools on our intranet for him to use and those sorts of things.
>
> [The physicians] are finding more and more value in it. It's a function of CPC staff getting a sense of what the clinics need, and the doctors are getting a better understanding of why this is important.… [The regional learning faculty] are really listening."
>
> *—Practice manager, independent practice*

Although a few deep-dive practices appreciated EHR-specific user groups, some practices had higher expectations for RLF and CMS to help them address challenges with their EHRs. Those practices believed that the RLF and CMS should play a larger role in reaching out to EHR vendors or that RLF should be able to provide direct technical assistance for EHR data issues, such as guiding practices without HIT support staff on how to extract EHR data.

Tailored assistance from RLF to the practices continued to be a key support for practice-level changes. Several deep-dive practices identified the following types of practice-specific guidance from RLF as beneficial to implementing CPC Milestones:

- Answering questions and helping practices understand CMS's expectations about CPC Milestones
- Helping practices find tools, such as PDAs and care compact templates
- Reviewing plans for Milestone-related changes, such as which shared decision-making topic, eCQM, or primary care strategy the practice intended to implement
- Facilitating problem-solving exchanges between practices and CMS

Deep-dive practices in a few of the larger systems that prevented the RLF from communicating directly with clinicians and staff at the practice site felt they had missed opportunities for practice coaching assistance with Milestone implementation.

The logistics of learning activities presented barriers to participation for some practices due to the amount of time required to attend in-person regional learning sessions or webinars being offered at inconvenient times. This was exacerbated for rural practices that had to travel long distances to attend in-person learning sessions. Physicians in particular believed that not enough of the material was relevant to them to justify the amount of time taken away from patient care. It is not clear that holding sessions in the evening or on the weekends would help to overcome this issue. Practice staff noted that they are exhausted from their weekday work and likely lacked the energy reserve to try to attend sessions on weekends.

In addition, **some deep-dive practice staff considered the large volume of webinars, email announcements, and email notifications about additions to the collaboration website to be overwhelming.** In general, some considered the content of these forms of communication to be helpful; however, it was challenging for deep-dive practices to distinguish between these different types of communications and indicate what about each was helpful or not.

5.4.8. Milestone 9: Health information technology

To fulfill the requirements for Milestone 9, practices are required to (1) attest that all eligible professionals achieved meaningful use in accordance with the requirements of the EHR Incentive Programs, (2) adopt and use EHR technology that meets the Office of the National Coordinator's (ONC) 2014 certification criteria, and (3) identify the care settings for which the practice is able to electronically exchange health information.

a. Overview of findings

Practices are using ONC-certified EHRs, and most practices attested that all their eligible providers are meaningful users. However, triangulation of data from Milestone reporting; practice, clinician, and staff surveys; and the deep-dive practices reinforce that practices face challenges obtaining and exchanging timely data from providers outside their practice or system. This poses barriers to improving follow-up care after ED visits and hospitalizations and to coordinating care for patients after their visits to specialists.

For CPC eCQM reporting, the practices had to work with EHR vendors to create results at the practice site level. Because certified EHRs are not required to report eCQMs at a practice site level, it would be expected that this would require additional effort and expense. Not surprisingly, deep-dive practices reported that current EHRs have inadequate and limited functionalities to support eCQM reporting, which practices see as a challenge to meeting the upcoming CPC requirements, as well as more general QI activities. Practices noted that, because of limited functionality of the EHRs, they needed substantial staff time to generate reports for quality improvement.

b. Detailed findings

b.i. Use of HIT in all CPC practices

According to Milestone 9 data from the last quarter of PY2014, 84 percent of CPC practices used ONC-certified EHRs, and 93 percent of practices reported that all their eligible professionals had attested as meaningful users. However, activities requiring data exchange via EHRs were much less common (Table 5.15). Although two-thirds of CPC practices overall

reported exchanging health information electronically with an acute care hospital or ED, this total masks wide variation by region. In New York, for example, only 12 percent reported such data exchange abilities. In addition, some practices could exchange data with only one or a few hospitals that their patients used. Finally, the reporting item for Milestone 9 combined electronic information exchange with EDs and hospitals into the same response category. In the deep-dive visits, however, we learned that information exchange about ED visits is more challenging than information exchange with hospitals at the point of discharge from inpatient stays (see later in this section). Accordingly, Milestone data may overstate information exchange with EDs. The 2014 practice survey data also suggest a lower percentage of exchange of information between practices and hospitals (see later in this section).

Only about half of CPC practices could exchange data with other outpatient providers (such as specialists), except in Ohio/Kentucky and Oregon, which had relatively high percentages of data exchange between outpatient providers. In Ohio/Kentucky, 65 percent of CPC practices are owned by health systems, which likely facilitates data exchange between providers if they are on the same EHR within the same system.

Table 5.15. Percentage of CPC practices using certified EHR, exchanging information electronically, and attesting to MU, CPC-wide and by region

Health information technology	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Practice attests that all eligible providers are meaningful users	93%	90%	92%	100%	99%	91%	84%	93%
Use 2014 ONC-certified EHR	84%	71%	75%	73%	96%	93%	81%	96%
Exchanging health information electronically with an acute hospital/emergency department*	64%	41%	84%	51%	12%	95%	89%	79%
Exchanging health information electronically with other physician offices/health clinics*	58%	49%	56%	54%	45%	73%	44%	84%
Exchanging health information electronically with a pharmacy*	48%	49%	36%	64%	34%	49%	52%	57%
Exchanging health information electronically with some other type of site (e.g. urgent care, SNF, rehabilitation facility)*	59%	27%	53%	37%	55%	77%	83%	76%
Number of Practices	482	63	73	67	74	75	63	67

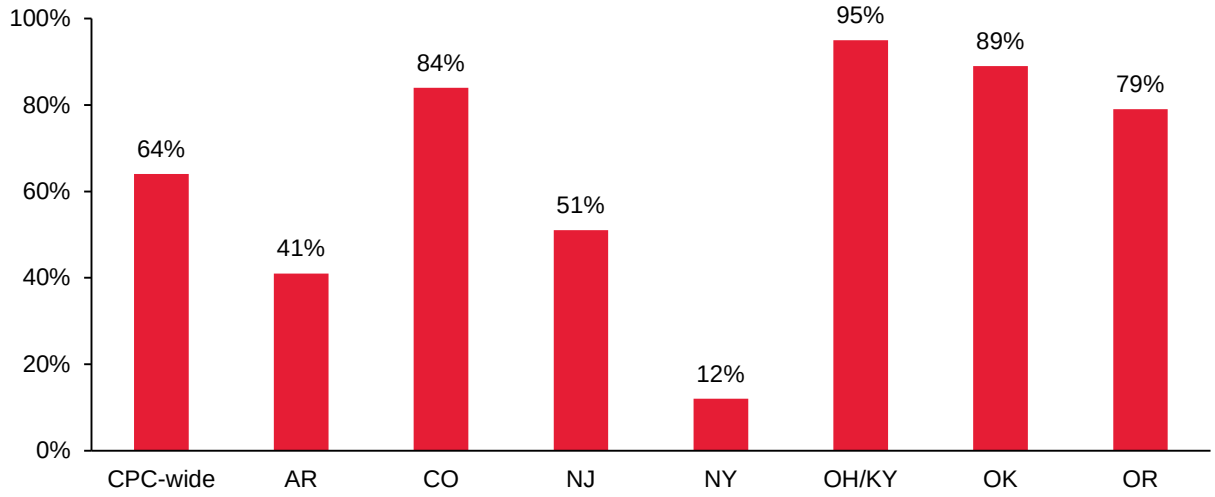
Source: Mathematica analysis of PY2014, Q4 Milestone submission results, except for the second row (2014 ONC-certified EHR), which comes from quarter 2 Milestone data.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014.

*Rows 3–6 do not list all potential parties with whom a practice might be able to exchange data electronically. We focused on those that were most frequently noted and that were most relevant to CPC Milestones.

ED = emergency department; MU = meaningful user; SNF = skilled nursing facility.

Figure 5.5. Percentage of CPC practices exchanging health information electronically with an acute hospital/emergency department, CPC-wide and by region



Source: Mathematica analysis of PY2014 Q4 Milestone submission results, provided by CMMI.

Note: Percentages for all regions are based on 482 practices that submitted Milestone data for the last quarter of 2014.

Most CPC and comparison practices in the 2014 practice survey reported having an "electronic health record system for managing patient care" (100 percent of CPC practices and 94 percent of comparison practices). They also reported high use of the EHR's e-prescribing function: of the 99.8 percent of CPC practices that reported having an EHR system for managing patient care, 99.6 percent reported using this function.[52] Of the 94.1 percent of comparison practices that reported having an EHR system for managing patient care, 99.1 percent of practices reported using this function. Nearly all CPC practices (97.3 percent) and 80.1 percent of comparison practices used EHR-generated data extracts or reports to guide quality improvement efforts (see Appendix D, Table D.9a).

[52] Discrepancies in estimates of self-reported e-prescribing (48 percent in the Milestone data, which asks about "the ability to exchange health information electronically with pharmacies" versus 99 percent in the practice survey, which asks about "practice site use of e-prescribing functionality of the EHR") may be due to several factors. First, the two items are worded differently, so respondents might have interpreted them differently. For example, the item for Milestone reporting might be interpreted as not just meaning sending prescriptions electronically but also as addressing bidirectional information exchange. Second, the practice survey self-report of 99 percent use of EHR e-prescribing may overstate use. Some practices may have e-prescribing set up in their EHRs but lack interoperability with some pharmacies. Recent research finds that some practices still face challenges in truly exchanging prescriptions electronically and that e-prescribing systems "still have a long way to go in terms of utilization, accessibility and overall capability" (http://aishealth.com/archive/ndbn110813-03). A recent ONC report found that, as of April 2014, 70 percent of physicians were e-prescribing using an EHR on the Surescripts network. (Surescripts, an e-prescription network, is the system used by the majority of all community pharmacies in the U.S. routing prescriptions, excluding closed systems.) (https://www.healthit.gov/sites/default/files/oncdatabriefe-prescribingincreases2014.pdf)

Reflecting the state of health information exchange in the United States, there is still room for improvement in how data are shared between CPC practices and other providers. Not surprisingly, results from the 2014 practice survey suggest CPC practices that are part of a medical system reported being better able to share data with providers *inside* their system than *outside* it. For example, 50 percent of CPC practices that are part of a system and use an EHR reported that they could import or exchange data with local hospitals in their system; only 32 percent could do so with local hospitals not in their system. Similarly, 71 percent of these CPC practices that are part of a system reported that they could import or exchange data with local diagnostic service facilities in their system; 48 percent reported that they could do so with facilities outside their system. Comparison practices reported less ability than CPC practices to report these data either inside or outside of their system. Among practices that use an EHR and are not part of a health care system or medical group, exchange of health information appeared to be most advanced with diagnostic service facilities (reported by 63 percent of CPC practices and 54 percent of comparison practices) and least advanced with other medical practices (reported by 21 percent of CPC practices and 28 percent of comparison practices) (see Appendix D, Table D.9a).

The 2013–2014 clinician survey results also suggest that EHRs and electronic information exchange at the time had limited ability to support CPC teams coordinating care with outside providers. Less than one-quarter of CPC and comparison physicians reported routinely transferring electronic data to outside providers (see Appendix D, Table D.11). As found in the practice survey, this survey showed that viewing electronic imaging results from diagnostic facilities was one of the more advanced elements: 65 percent of CPC and 56 percent of comparison physicians reported routinely reviewing electronic imaging results. About 90 percent of both CPC and comparison physicians reported routine use of the EHR to help reconcile medications.

b.ii. Use of HIT in deep-dive practices

In a few deep-dive practices, Milestone 9 work involved implementing new EHR systems that better supported their clinical care and reporting needs, whereas several other practices had focused on upgrading or adding functions to existing systems. Overall, practices faced several challenges related to HIT use, many of which have already been described in our discussion of other Milestones. Here, we provide additional information on two specific challenges: (1) the electronic exchange of health information, and (2) the use of EHR technology to support quality improvement efforts.

Many deep-dive practices continued to lack direct access to electronic health information from outside providers (such as hospitals and specialists). For example, practice staff often had to set up a process whereby they searched the discharge records for a hospital to identify which of their primary care patients were recently discharged. As a result, many practices used labor-intensive workarounds to ensure access to information needed to effectively coordinate care for their patients and thus missed information that could help practices better coordinate patient care.

Information exchange within collaborating groups of providers or between practices and hospitals within the same system was typically handled electronically via shared EHRs and remote access to hospital records. However, even among system-affiliated practices, access to information from providers outside the system was handled by fax or telephone calls. As one lead physician said, "It gets difficult when we go outside the system." In instances where information was not shared electronically, practices typically rely on patients to inform them of hospital admissions and ED visits, creating holes in knowledge of patient needs, gaps in care, and delays and missed chances for care coordination.

> "As far as getting information from other health care systems … that's always been a challenge … because we don't see that information come right through the computer. So unless the patient tells us they had a follow-up with a certain doctor, we wouldn't know to request the records."
>
> *—Registered nurse care coordinator, system-owned practice*

Access to a local regional health information exchange was an important facilitator of electronic information exchange in support of care coordination. However, development of these exchanges remained at an early stage, and, in two regions (Colorado and Oklahoma), such an exchange was reportedly being used by only some practices. Start-up delays, including delays in the inclusion of patient records in the exchange, have limited their usefulness so far in most regions. Much of the electronic exchange of information in the deep-dive practices is occurring within systems with shared EHRs or through access to records at one or two local hospitals. Two-way exchange of information with other specialists and entities such as state immunization registries remained difficult and limited. In some cases, strong EHR vendor relationships and on-site or system-level IT expertise facilitated some improvements in health information exchange to support care coordination.

Many practices continued to have difficulty when trying to use their EHR beyond documentation of clinical encounters to support ongoing quality improvement. Some practices reported that their EHRs' limited capabilities posed challenges to reporting eCQMs to meet the upcoming CPC requirements or to submitting meaningful use certification reports. **In some cases, staff and practice leaders indicated that a systematic and consistent process for reporting eCQMs was absent from their EHR or required additional investment of staff time.** In some of these cases, practice members were using manual data entry and extraction workarounds to meet reporting requirements. Access to IT support locally or at the system level was often required to use EHR reporting functions, when they were available. In some cases, limited access to this support was a barrier to quality improvement efforts. A few practices reported that their EHR vendor had developed a CPC dashboard for collecting and reporting eCQM data. Others reported that impending EHR upgrades were expected to help with CPC reporting requirements. Many practices had developed manual workarounds, but, as one practice leader said, "We dedicate a lot of manpower [to developing reports for quality improvement] ….It's probably over- dedicated."

5.5. Monitoring of adequate Milestone progress

In PY2014, CMS and RLF assessed practice progress on Milestones based on quarterly Milestone report submissions. As of the fourth quarter of PY2014, CMS used practice assessment guidelines to assess Milestone progress. The guidelines include metrics that describe

the continued progress practices should be making on each Milestone and list items to look for that would indicate potential deficiencies. CMS assigns a CAP to those practices not making enough progress on Milestones. For PY2013, CMS sent CAPs to 38 practices based on Milestone performance; all these plans were issued in early 2014. All 38 practices successfully addressed CMS's concerns. In PY2014, practices submitted Milestone data quarterly (rather than annually, as in PY2013), and those showing deficiencies in their progress were placed on a CAP on a rolling basis. In total, CMS placed 22 practices on a CAP for issues arising from their PY2014 performance, with one practice placed on a CAP twice during 2014. Only 3 of the 38 practices placed on a CAP in PY2013 were placed on a CAP again based on their PY2014 performance.

In PY2014, 72 percent of practices placed on a CAP were deficient in only one Milestone, and about a quarter of practices were asked to remediate two or more Milestones. Practices were most commonly placed on a CAP for deficiencies in work on Milestones 2 (risk-stratified care management, which involved just under two-thirds of all practices placed on a CAP) and 6 (care coordination across the medical neighborhood, which involved a quarter of practices on a CAP). Milestones 3, 4, and 7 were other areas of deficiency that resulted in a CAP plan.

Because practices were placed on a CAP on a rolling basis in PY2014, CMS gave practices different deadlines for remediation of Milestones. Among those placed on a CAP based on their performance during the first three quarters of PY2014, practices were expected to remediate deficiencies by the end of the reporting period for PY2014. For those placed on a CAP based on fourth-quarter performance, CMS expected remediation by the third quarter of PY2015. As of early PY2015, of the 22 practices that received CAPs for PY2014 performance, 5 had been removed from the CAP and 17 remained. Of those 17 practices, 3 had been placed on a CAP based on Q2 performance, 2 had been placed on a CAP based on Q3 performance, and 12 had been placed on a CAP based on Q4 performance (Table 5.16).

Table 5.16. Number of practices placed on a corrective action plan in PY2014

Placed on a CAP based on performance in these quarters of PY2014	Total number of practices placed on a CAP for PY2014, based on prior quarter's Milestone performance							
	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Quarter 1 (Jan–March)	2	0	0	0	1	0	0	1
Quarter 2 (April–June)	5	0	0	0	4	0	0	1
Quarter 3 (July–Sept.)	2	0	0	0	0	0	0	2
Quarter 4* (Oct–Dec.)	13	1	0	1	1	1	0	9
Total for PY2014	22**	1	0	1	6	1	0	13

Source: CAP data provided by TMF.

*Notified of a CAP in PY2015.

**Includes an Oregon practice that received two separate CAPs during PY2014.

5.6. Cross-cutting barriers to, and facilitators of, implementing changes in care delivery across Milestones

In addition to the barriers and facilitators to implementing individual Milestones described earlier in this chapter, CPC practices experienced a number of cross-cutting factors that affected implementation across several Milestones. Collectively, the quantitative and qualitative data used in assessing implementation of CPC Milestones point to six types of barriers and facilitators to changing care delivery:

1. Health information technology
2. Practice ownership/affiliation
3. Teamwork
4. Leadership
5. General transformation overload
6. External policies (for example, incentives created by FFS payment)

Health information technology, when working well, seemed to support CPC functions in the practice. For example, practices able to generate and use data reports from their EHRs for quality improvement reported the greatest gains in data-driven quality improvement. Moreover, in systems where primary care clinicians and specialists used the same EHR, communication about referrals and consultations occurred more systematically. CMS had emphasized the presence of HIT and EHRs when selecting regions and practices to participate in CPC.

On the other hand, the challenges practices faced in obtaining timely electronic data from providers outside of their practice or system posed barriers to improving follow-up care after ED visits and hospitalizations and to coordinating care for patients after their visits to outside specialists. Even among providers in the same system, communication processes were not always in place to secure consistent information exchange between providers. Rather, a primary care clinician simply went into the patient's EHR to learn which specialists the patient had seen and then looked up that patient's consultation notes.

Practices reported that current EHRs have inadequate and limited functionalities to support eCQM reporting and that workflows and data entry by clinicians needed to be heavily modified to permit them to consistently report eCQMs and CPC Milestone data. Practices devoted considerable resources (practice staff and IT personnel time) to generating reports for quality improvement and CPC Milestone reporting. It was particularly challenging for practices outside of large systems to identify and fund consistent IT support.

Practice affiliation and ownership both pose barriers to, and facilitate, CPC implementation. In deep-dive practices that are part of a larger system, practice staff appreciated the support they receive from the larger organization for infrastructure, especially HIT support and staffing for on-site care managers. A shared EHR across system-owned practices and affiliated subspecialists and hospitals facilitated health information exchange. At the same time, these practices wanted more autonomy at the practice level to design care processes for certain Milestones. In contrast, small independent practices, and even medium-sized practices that are

not part of larger systems, would like more resources to hire or contract with behavioral health specialists and pharmacists to support their care management and coordination efforts, as well as more resources to hire at least part-time care managers.

Teamwork in the primary care practice was noted by participants in some of the deep-dive practices as being critical to meeting particular Milestones (especially Milestones 2, 5, 6, and 7). In the clinician and staff surveys, teamwork was an area that showed room for improvement, particularly in clearly defining roles and responsibilities and in maintaining consistent and structured communication among team members. For example, only 33 percent of CPC physicians strongly agreed with the statement, "When there is a conflict the people involved usually talk it out and resolve the problem successfully." Similarly, only 29 percent of CPC physicians strongly agreed with the statement, "Staff understand their roles and responsibilities." About half of CPC physicians, nurses, and care managers reported that 25 percent of their work in a typical week could be done by others with less training, an indicator of room for additional delegation to other team members. In the deep-dive practices, clinicians who had engaged in teamwork (for example, by working cooperatively with nurse care managers for Milestone 2), noted the benefits of doing so and were more open to pursuing teamwork for other activities.

Leadership is an area that physicians from both CPC and comparison practices reported on the clinician survey as having room for improvement. They felt a need for leadership to provide more support for teams' change efforts, open communication styles, an improvement culture, and productive teamwork. For example, only 34 and 28 percent of CPC and comparison physicians strongly agreed that their leadership strongly supports practice change efforts. Furthermore, only 15 to 25 percent of physicians strongly agreed that the practice learns from mistakes, operates as a team, and seeks new ways to improve how they do things. On a related note, CPC physicians generally reported about the same level of "adaptive reserve"—a measure of internal capability for organizational learning and transformation—as comparison physicians, both on the summary scale and the individual questions. Deep-dive interviews found that CPC implementation was facilitated by having a physician champion at each practice who:

- Was enthusiastic about CPC
- Helped guide change
- Listened to the suggestions of the primary care team on workflows
- Acknowledged progress
- Gave feedback to the team

In practices that were part of a health system, having sustained buy-in from higher-level administrators who value the role of primary care was also seen as critical.

General transformation overload. Several practices noted that the implementation of many Milestones concurrently, especially when paired with ongoing EHR and quarterly CPC reporting requirements, was overwhelming. This sentiment was voiced in both small and large practices. On the other hand, some of the practices that chose to withdraw from CPC during PY2014 noted they were doing so to join ACOs, which they perceived would allow them to move faster on care process and payment reform (see Chapter 2 for more information). Some

deep-dive participants noted that they would like to be able to focus on just those Milestones they thought to be most important, often highlighting Milestones 2 and 6 as those with the most clinical meaning and potential ability to improve patient outcomes.

External factors. Clinicians in system-owned and independent practices noted in the clinician survey and the deep-dive interviews that external factors create barriers to their ability to deliver patient-centered care. (Responses from CPC and comparison physicians were similar in this regard.) The most commonly reported barriers included having too many administrative tasks, a lack of financial incentives from payers, EHR challenges, and inadequate time for patient care. Twenty-five to 37 percent of CPC physicians said that each of these barriers limited their ability to provide patient-centered care "a great deal."

In the clinician survey, CPC physicians in both clinician-owned and system-owned practices reported having limited control of their work environment, which may constrain their ability to improve quality and make effective practice changes. In particular, 87 percent of CPC physicians felt they had no or only some control of the volume of paperwork required, and 70 percent had many work interruptions. The control-of-work scale (which sums responses across these questions) suggests that CPC physicians reported less control than comparison physicians; these differences are small but statistically significant.

Summary. In general, the facilitators and barriers to CPC implementation identified for PY2014 were similar to those in PY2013. However, practices, particularly in the deep-dive interviews, provided more detailed, concrete examples of how practice change activities were facilitated or challenged—reflecting that they are further along with, and more deeply involved in, the Milestone work. For example, as we found in the 2013 deep-dive visits, practices perceived that implementing CPC activities, such as care management and quality improvement (Milestones 2 and 5), was compatible with care improvement objectives. However, compared to the 2013 interviews, in 2014, deep-dive practices more heavily emphasized the importance of care managers and care coordinators in supporting these two Milestones and in carrying out activities related to other Milestones. During the 2013 deep-dive visits, practices identified challenges with modifying their EHRs to implement patient engagement and care management. In the 2014 interviews, they more specifically described a lack of EHR software and functionality to support care management, quality improvement, and use of shared decision making, as well as inadequate technical assistance with EHR data issues to support quality improvement.

In Table 5.17, we summarize the facilitators and barriers that emerged from the summer 2014 deep-dive interviews with 21 practices, many of which were reinforced by data from the practice and clinician and staff surveys. We present only those facilitators and barriers commonly mentioned by deep-dive practices.

Table 5.17. Facilitators of, and barriers to, implementation of CPC Milestones for PY2014, as reported by deep-dive practices

	CPC Milestone for PY2014							
	Milestone 2	Milestone 3	Milestone 4	Milestone 5	Milestone 6	Milestone 7	Milestone 8	Milestone 9
	Care management	Access and continuity	Patient experience	Quality improvement	Care coordination	Shared decision making	Participating in learning collaborative	HIT
Characteristics of the CPC initiative								
Facilitators								
Adequate resources for new capacities (staff, financial)	O					O		O
Compatibility with care improvement objectives	O	O	O	O				
Perceived improvement in relationships with other providers	O							
Practice teamwork with clear roles and responsibilities	O			O	O	O		
Barriers								
Changes in staff roles and time required to implement change		X				X		
Complex or unclear requirements						X		
External environment and context								
Facilitators								
Compatibility with other initiatives (HIE, ACOs)					O			O
Developing relationships with hospitals and specialists					O			
Patient receptivity to change	O	O			O	O		
Barriers								
Lack of electronic access to health information from other settings					X			X
Difficulties engaging patients in Milestone activities	X		X		X	X		
Practice structure and inner setting								
Facilitators								
Experience with quality improvement efforts				O				
Organizational commitment to Milestone activities	O			O		O		

	CPC Milestone for PY2014							
	Milestone 2	Milestone 3	Milestone 4	Milestone 5	Milestone 6	Milestone 7	Milestone 8	Milestone 9
	Care management	Access and continuity	Patient experience	Quality improvement	Care coordination	Shared decision making	Participating in learning collaborative	HIT
System-affiliated practices had support for HIT and QI	**O**			**O**				
Barriers								
Independent practices lacked resources and support for HIT and QI	**X**			**X**				**X**
System-affiliated practices lacked local authority to make change	**X**					**X**	**X**	
Inadequate EHR functionality to support Milestone activities	**X**			**X**		**X**		**X**
CPC implementation process within the practice								
Facilitators								
Use of established QI processes				**O**				
Hiring staff or altering existing staff roles		**O**			**O**			
Staff (care manager, care coordinator) support changes	**O**			**O**	**O**			
Meetings with other providers					**O**		**O**	
Participated in tailored activities to guide changes							**O**	
EHR vendor relationships and on-site or system-level IT expertise					**O**			**O**
Barriers								
Uncompensated time spent on Milestone activities						**X**	**X**	
Inadequate technical assistance with EHR data issues (e.g., creation of reports for quality metrics); lack of some functionalities; poor interoperability	**X**			**X**	**X**		**X**	**X**

Note: Facilitators are marked with an (**O**) and barriers with an (**X**) for each function where they apply. Some issues (for example, patient receptivity to change or willingness to engage in activities) can act as both facilitators and barriers and may therefore appear in both facilitator and barrier rows.

ACO = accountable care organization; EHR = electronic health record; HIE = health information exchange; HIT = health information technology; QI = quality improvement.

5.7. Implications for CPC implementation in the future

Although PY2014 saw considerable progress in CPC practices' work on the Milestones, several of our findings raise concerns about practices' ability to implement multiple CPC functions. Some of these challenges arise from larger system issues outside the practices' control. Key issues for consideration include the following:

- **Improved EHR design and IT support is needed** to enable practices to create, document, and modify care plans; report data on CPC Milestones; and produce reports to support performance reporting and quality improvement. Such challenges may be particularly important in PY2015, with its increased emphasis on CPC practices using data to understand changes and to determine whether those changes are leading to CPC aims. Practices noted that an intense amount of resources, including staff time, is required to generate reports for quality improvement and CPC Milestones.
- **Practices want improved support for data exchange with hospitals, EDs, and other specialists and community-based providers** caring for the same patients. Given the challenges many practices faced in obtaining timely discharge data, particularly after ED visits, establishing standard operations and agreements to manage care transitions will likely require increased cooperation with hospitals, particularly when those hospitals are not affiliated with the primary care practices. The current state of health information exchange in the United States (for example, poor interoperability) also is a barrier to care coordination.
- **Practices that are physician owned, not part of a health system, or in less populated areas need improved access to behavioral health specialists and pharmacists so they can pursue those aspects of care management.** They feel that behavioral health specialists are not sufficiently available in their communities and that they lack the resources to integrate adequately with them.
- **Some small independent practices need more infrastructure supports.** Additional support for independent practices, both to share care managers who can come on site part-time and to receive IT support, would likely benefit care management, coordination, and quality reporting efforts.
- **System-owned practices usually had more resources than independent practices; however, they generally had less autonomy in choosing their care management strategy for Milestone 2, eCQMs for Milestone 5, and shared decision-making topics for Milestone 7.** When systems decide what and how their practices should implement changes, it is important for them to incorporate on-the-ground clinicians in those planning discussions and to communicate clearly to the clinical staff the rationale for the decisions made.
- **There still appears to be a need for improved understanding among providers about the concept of preference-sensitive conditions for shared decision making.** Confusion persists among clinicians about the difference between general patient education for conditions for which clear evidence-based treatments exist (such as immunizations and management of hypertension) versus preference-sensitive conditions (such as low back pain), for which management options are equivocal and patient preference should play more of a role in the selection of management options. There is also a need to point some

practices more clearly toward neutral, science-based PDAs. Given the efforts CMMI has made to explain this concept via webinars, action groups, and other resources, a better understanding of preference-sensitive conditions may require a shift in the culture and incentives of providers.

- **Supports for interprofessional teamwork, with clearly defined roles and responsibilities for clinicians and staff, is still needed in some practices.** Teamwork in the CPC deep-dive practices was an important facilitator for progress on several Milestones, including care management, quality improvement, care coordination, and shared decision making. Technical assistance on teamwork might help practices be more open to delegation of certain types of work (for example, care management activities that care managers can perform) and foster more efficient and effective workflows.
- **Lessons for potential future scale-up or future demonstrations.** There are many lessons for future efforts to improve primary care delivery. Some could be built into the design of future initiatives; others pertain to broader contextual factors that play an important role in whether transformation is successful. These lessons include:
  - **Practice change is difficult to achieve, even when practices are receiving strong financial incentives and other supports, and it takes time to see results of those changes.** The challenges to practice change are numerous, including limited bandwidth to fully engage in multiple simultaneous Milestones, inadequate support for robust care management and HIT implementation in smaller independent practices, and many layers of management in larger system-owned practices (which can affect practice autonomy and, in some cases, keep RLF from meeting directly with the on-the-ground clinical staff). In addition, all practices face challenges related to practice, provider, and patient cultures; long-entrenched behaviors; leadership; teamwork functioning; and external financial or policy factors beyond their control. Overcoming these challenges to modify workflows and system supports consistently across providers requires ongoing time, resources, and effort.
  - **Having resources, as well as access to certain types of providers, is critical to success and scale-up of efforts to achieve practice change.** Among small independent practices, most of the CPC resources reportedly go to hiring care managers, and few resources are left for other services or for buying the time of other types of team members (for example, behavioral health providers or pharmacists). Among large practices, or in systems-owned practices that have economies of scale and the ability to hire or contract with these types of providers, accomplishing the selected primary care management strategy (such as behavioral health integration) appears more manageable. Efforts to help practices establish relationships with such personnel, perhaps shared across primary care practices, may foster behavioral health integration and other efforts to integrate community-based resources.
  - **Interventions that allow practices to select and sequence their practice change activities may help accommodate practices at varying stages of change or with different levels of resources.** For example, giving practices the option to select from a menu of Milestones and implement certain ones first may help accommodate small independent practices that have less bandwidth for change due to resource and staffing limitations. For the practices that are part of larger systems and may have economies of

scale as well as robust HIT, the opportunity to move faster on or build out their Milestone work might also be an option. Small practices may be more facile, in general, at Milestones related to interpersonal continuity of care for their patients or figuring out how to enhance teamwork. Larger system-owned practices, on the other hand, may find that electronic reporting of data is a Milestone they can implement relatively quickly.

- **Identifying cost-effective ways to harness peer-to-peer learning, which is highly valued by practices, is important to enhance the sustainability of learning and provide a potentially strong adjunct to technical assistance resources.** In cases where HIT processes or functions are a focus of learning, the presence of a practice coach from the RLF or facilitator knowledgeable about both clinical care processes and related EHR capabilities is helpful to keep discussions on track.
- **A few practices that had access to health information exchanges or had engaged in prior initiatives that developed HIT capabilities across providers seem better positioned than others to coordinate care across settings.** These practices also have more experience with generating practice- or clinician-level data reports and lists of patients from their EHRs for quality improvement. For most practices in most regions, work clearly remains to be done to improve interoperability and strengthen health information exchanges.

6. HOW DID PATIENTS RATE CPC PRACTICES DURING THE FIRST TWO YEARS OF CPC?

CPC is expected to improve patient experience through transformations in care delivery. In this chapter, we describe how patient experience changed between the first and second years of CPC for Medicare FFS beneficiaries, how ratings of CPC practices have changed relative to ratings of comparison practices, and areas where practices still have considerable opportunity to improve.

6.1. Overview of findings

CPC is expected to ultimately improve patient experience through participating practices' work on annual Milestones (especially Milestones 3, 4, and 7). However, there is also some risk that changes from transforming care delivery could worsen patient experience, particularly at the start of CPC. We analyzed patient experience reported by more than 25,000 Medicare FFS beneficiaries in 496 CPC practices, and nearly 9,000 beneficiaries in 792 comparison practices, for the periods June through October 2013 (8 to 12 months after CPC began) and July through October 2014 (21 to 24 months after CPC began), using the Consumer Assessment of Healthcare Providers and Systems Clinician and Group Patient-Centered Medical Home Survey (CG-CAHPS PCMH).

Between its first and second year, CPC had small, statistically significant, favorable effects on the percentage of respondents choosing the most favorable ratings for three of six CAHPS composite measures: (1) getting timely appointments, care, and information (2.1 percentage points, $p = 0.046$); (2) providers support patients in taking care of own health (3.8 percentage points, $p = 0.000$); and (3) shared decision making (3.2 percentage points, $p = 0.006$). These were driven by small (less than 2 percentage points) year-to-year improvements for CPC practices and small declines (less than 2 percentage points) for comparison practices.[53]

Looking beyond the six CAHPS composite measures to the specific questions included in them and to other questions in the survey, patients from CPC practices reported slightly more favorable differences over time than patients from comparison practices—generally of small magnitude—than expected by chance. Most responses to the survey questions were comparable for the CPC and comparison patients.

These results suggest that transforming care during the first two years of the initiative did not negatively affect patient experience, and did generate some small improvements.

CPC and comparison practices have room for improving patient experience in certain areas. Despite CPC practices showing small improvements on average over the past year, roughly half of CPC patients continued to report difficulty getting timely appointments, care, and information and having providers' support in taking care of their own health, among other areas.

[53] Tests of the null hypothesis of no effects were tested at the 0.10 level, and examined as a group across the related outcome measures to distinguish likely true effects from chance differences. Given that estimated effects for half of the six composite measures are statistically significant at the 0.05 level, and two of these are significant at even the 0.01 level, we are confident in concluding there were small effects.

6.2. Methods

6.2.1. Overview

We conducted a repeated cross-sectional study using a large sample of Medicare FFS beneficiaries attributed to CPC practices and to the comparison practices selected for the evaluation. We used a difference-in-differences regression analysis to evaluate differences in the change in patient experience between CPC and comparison practices roughly one year (8 to 12 months) and two years (21 to 24 months) after CPC began.

We examined the CPC-comparison differences in the change in the proportion of patients who gave the most favorable—or "top box"— ratings over time for 36 survey questions included in both survey rounds that cover six dimensions of primary care. We evaluated these differences overall and separately by region. We do not draw inferences about effects from tests of each hypothesis separately, but rather from the findings across the set of questions and composites, relying most heavily on the summary composites. Within regions, we look for consistency in estimates across the items in each composite.

6.2.2. Sample and response rates

Using Medicare claims data, we attributed Medicare beneficiaries to practices, and using survey data, we identified those attributed Medicare beneficiaries who had visited the practice at least once in the 12 months before the start of the survey round. (We also surveyed a sample of non-Medicare patients from CPC practices, but we did not use their responses in this analysis because we did not have a comparable sample of non-Medicare patients for the comparison practices.) In each survey round, we mailed survey questionnaires to a sample of an average of 119 attributed Medicare FFS patients from each practice participating in CPC at that time and an average of 24 attributed Medicare FFS patients from comparison practices, drawing larger samples from larger practices. These sample sizes aimed to yield completed interviews with at least 40 attributed Medicare respondents per CPC practice and 14 respondents per matched set of comparison practices.[54] (Comparison practices were selected using "full matching" to form matched sets that contain one CPC and multiple comparison practices or one comparison and multiple CPC practices.) The average sample sizes of completed surveys were 53 per practice for the CPC practices and 18 for the comparison practice sets, exceeding our targets of 40 and 14, respectively.

We obtained response rates of 45 and 46 percent from CPC and comparison practices, respectively, in 2013. We then excluded patients from 2 of the 497 CPC practices in CPC at that time and their comparison matched sets because the calculated weights of the patients in those practices (a combination of matching weights and nonresponse weights) were large outliers and would have given these patients undue influence on the results. This left samples of 25,843

[54] The targeted sample sizes of 40 attributed Medicare FFS respondents per CPC practice and 14 respondents per matched set of comparison practices is based on power calculations we did at the start of the evaluation. The targeted samples between the two groups differ due to the varying uses of the respondent data for the evaluation. Respondent data from CPC practices are used to provide practice-level feedback and to conduct the impact analysis; respondent data from comparison practices are used only for the impact analysis. To achieve better power, we allocated more sample to the CPC practices to support practice-level feedback. More information on our survey sampling methodology can be found in the design report (Peikes et al. 2014).

Medicare FFS patients in 495 CPC practices and 8,949 Medicare FFS patients in 818 comparison practices. For the 2014 survey, we sampled patients from 496 CPC practices: 2 of the 497 total CPC practices in 2013 closed in summer/fall 2013, and one practice split into two practices in 2014. Similarly, the number of comparison practices in our sample fell from 818 in 2013 to 792 in 2014. We obtained response rates of 48 and 47 percent for the CPC and comparison practices, respectively. The final sample for the round 2 survey contains 26,356 Medicare FFS patients in 496 CPC practices and 8,865 Medicare FFS patients in 792 comparison practices. The patients were selected as cross-sections; about 15 percent of respondents replied in both survey rounds.

6.2.3. Measurement of patient experience

Our patient survey instrument contains items from the CAHPS Clinician and Group 12-Month Survey with Patient-Centered Medical Home (PCMH) supplemental items (Agency for Healthcare Research and Quality 2015). The survey gauges patient experience over the past 12 months across six dimensions of primary care: (1) patients' ability to get timely appointments, care, and information; (2) how well providers communicate; (3) attention to care from other providers; (4) providers' support for patients in taking care of their own health; (5) shared decision making; and (6) patients' overall rating of the primary care provider. Table 6.1 details the specific patient care experiences that are measured in the six summary composite measures we created.

Table 6.1. Experiences included in the patient survey composite measures

Getting timely appointments, care, and information (5 questions)
Patients' ability to get appointments as soon as needed for care needed right away, and for check-up or routine care
Whether the patient received timely answers to medical questions after phoning the provider during regular office hours
How often the patient saw the provider within 15 minutes of appointment time
How well providers communicate (6 questions)
How often providers explained things to patients clearly, listened carefully to the patient about health questions and concerns, and provided the patient with easy-to-understand instructions and information
How often the provider knew the important information about the patient's medical history
How often the provider showed respect for what the patient had to say, and the patient felt that the provider spent enough time with them
Attention to care from other providers (2 questions)
How often the provider seemed informed and up-to-date about the care patients received from specialists
Whether practice staff spoke with patients at each visit about all of the prescription medications they were taking
Providers support patients in taking care of their own health (2 questions)
Whether someone in the provider's office discussed with the patient specific goals for his/her health, and asked them whether there are things in life that make it hard for them to take care of their health
Shared decision making (3 questions)
If the patients talked about starting or stopping a prescription medicine, how often the provider talked about the reasons the patient might and might not want to take the medicine, and what the patient thought was best
Patients' rating of providers (1 question)
Patients rated their provider on a scale of 0 to 10, with 0 being the worst and 10 being the best

6.2.4. Survey administration

The first survey was administered June through October 2013, 8 to 12 months after CPC began. The second was administered July through October 2014, 21 to 24 months after CPC began. All surveys were administered by mail, following the CAHPS Clinician and Group 12-Month Survey protocol, with slight modification in the timing of the mailings.

6.2.5. Analysis

We focus our analysis on the most favorable, or "top box," responses. Examples of these responses are (1) the provider *always* explained things to the patient in a way that was easy to understand; (2) in the last 12 months, between visits, *yes,* the patient did receive reminders about tests, treatment, or appointments from the provider's office; and (3) the patient got an appointment for care needed right away that *same* day. For each of the 44 questions in our surveys (36 asked in both survey rounds and 8 asked in only one survey round), we calculate the likelihood (predicted probability) that patients responded to a question with the most favorable response.

In addition to analyzing responses to individual questions, we created composite measures to summarize the survey's six dimensions of care. The composites are based on 19 of the 36 questions asked in both rounds. Each composite measure contains from one question (for the composite measure of patients' rating of providers) to six questions (for the composite measure of how well providers communicate) (Table 6.1). The survey questions used to calculate the composite measures are shaded grey in Table 6.2. We followed the CAHPS Clinician and Group Survey scoring instructions (Agency for Healthcare Research and Quality 2012). We created the proportions of patients who have the most favorable responses for composite measures by averaging nonmissing binary indicators of the most favorable responses for the questions in that domain (that is, if the domain contained four questions and the respondent answered all four and gave the most favorable response for three of them, the patient's score was 0.75).

For the 36 questions in both survey rounds and the six composite measures, we performed a difference-in-differences regression analysis comparing the changes over time in the proportion of Medicare FFS patients who gave the most favorable response between CPC and comparison practices. We ran regressions both overall and separately by region, controlling for patient and practice characteristics. We used ordinary least squares (OLS) regressions for the composite (continuous) measures and logits for the (binary) proportion giving the most favorable rating for individual questions. For the eight questions asked in only one survey round (two in 2013 and six in 2014), we conducted a significance test on the difference between the predicted probabilities for CPC and comparison practices. We considered *p*-values less than or equal to 0.10 to be statistically significant (but relied on the combination of findings across related measures to draw inferences about whether the results were likely to be true effects or chance differences). The analysis had sufficient power to detect relatively modest differences between CPC and comparison practices, with 80 percent power to detect relative differences of 1 to 2 percentage points.

Table 6.2. Patient experience results: Difference-in-differences of predicted probabilities of giving the most favorable responses from 2013 to 2014, sample of Medicare FFS patients CPC-wide

Question[a,b]			2014		2013			
2014	2013		Patients in CPC Practices	Patients in Comparison practices	Patients in CPC Practices	Patients in Comparison practices	Diff-in-diff (Pct. Pt.)	*p*-value
Composite measure[c,e]								
Q7, 10, 15, 17, 23		Getting timely appointments, care, and information	52.7	52.0	52.2	53.6	2.1	0.046
Q24-25, 27-30		How well providers communicate	79.7	80.4	79.4	80.5	0.5	0.563
Q40, 44		Attention to care from other providers	76.1	75.8	75.7	76.5	1.1	0.199
Q41-42		Providers support patients in taking care of own health	47.8	46.1	45.9	48.0	3.8	0.000
Q34-36		Shared decision making	61.5	61.1	59.9	62.7	3.2	0.006
Q37		Patients' rating of providers	75.6	76.3	74.9	76.2	0.6	0.623
Getting timely appointments, care, and information								
Q7		Patient always got appointment as soon as needed when s/he phoned provider's office to get an appointment for care needed right away	67.2	66.4	67.0	68.3	2.1	0.224
Q10		Patient always got appointment as soon as needed when s/he made appointment for check-up or routine care	71.7	70.9	71.5	72.8	2.2	0.089
Q15		When patient phoned provider's office during regular office hours, s/he always received an answer to his/her medical question that same day	57.0	58.0	56.0	58.9	1.9	0.317
Q17		When patient phoned provider's office after regular office hours, s/he always received an answer to his/her medical question as soon as needed	54.1	53.2	51.5	51.2	0.6	0.893
Q23	Q21	If patient had an appointment, s/he always saw provider within 15 minutes of appointment time	29.3	29.5	28.5	29.1	0.4	0.784

Question[a,b]			2014		2013			
2014	2013		Patients in CPC Practices	Patients in Comparison practices	Patients in CPC Practices	Patients in Comparison practices	Diff-in-diff (Pct. Pt.)	*p*-value
Q8		When patient phoned providers office for care needed right away, patient usually got an appointment on same day	42.9	43.2	44.8	47.8	2.8	0.124
Q11		Provider's office gave patient information about what to do if care was needed during evenings, weekends, or holidays	78.8	79.5	77.8	79.3	0.8	0.440
Q13		If patient needed care during evenings, weekends, or holidays in the last 12 months, patient was always able to get needed care from provider's office	36.4	33.6	33.0	36.0	5.8	0.046
How well providers communicate								
Q24	Q22	Providers always explained things to patient in a way that was easy to understand	81.2	81.5	80.8	81.5	0.5	0.591
Q25	Q23	Provider always listened carefully to patient	82.3	83.0	82.5	83.3	0.2	0.869
Q27	Q25	When patient talked with provider about health questions and concerns, provider always gave patient easy-to-understand information	77.4	78.2	78.9	80.3	0.5	0.652
Q28	Q26	Provider always seemed to know the important information about patient's medical history	74.4	74.3	73.6	74.9	1.5	0.208
Q29	Q27	Provider always showed respect for what patient had to say	86.9	88.0	87.1	87.5	-0.7	0.412
Q30	Q28	Provider always spent enough time with patient	76.8	78.0	75.2	76.0	-0.2	0.820
Q38	Q36	Patient always felt provider really cared about patient as a person	77.7	78.3	77.2	79.1	1.3	0.213

Question[a,b]			2014		2013			
2014	2013		Patients in CPC Practices	Patients in Comparison practices	Patients in CPC Practices	Patients in Comparison practices	Diff-in-diff (Pct. Pt.)	*p*-value
Q19	Q19	When patient emailed provider's office, s/he always received an answer to his/her medical question as soon as needed	68.8	68.8	63.7	67.3	3.6	0.542
Q21[d]	N/A	If provider's office used a web portal or website, patient often (more than 3 times) used it to email the practice, review medical information, request prescription renewal or to make appointments	12.8	13.5	n/a	n/a	-0.7	0.614
Q22	Q20	In the last 12 months, between visits, patient received reminders about tests, treatment, or appointments from provider's office	70.3	69.4	68.9	70.3	2.2	0.140
Q32	Q30	If provider ordered a blood test, x-ray, or other test, provider's office always followed up to provide patient with test results	75.7	75.9	75.9	77.3	1.1	0.363
Q45	Q43	Practice staff asked patient during the last 12 months if there was a period of time when they felt sad, empty, or depressed	43.4	41.4	38.4	39.6	3.1	0.049
Q46	Q44	Provider spoke with patient during the last 12 months about things in life that are worrisome or cause stress for the patient	43.7	42.5	40.7	42.3	2.8	0.065
Q47	Q45	Practice staff spoke with patient during the last 12 months about a personal, family, mental, emotional, or substance abuse problem	29.2	28.2	28.6	29.3	1.7	0.171
Q48	Q46	Clerks and receptionists at provider's office always were as helpful as patient thought they should be	67.3	68.7	66.6	68.0	0.0	0.999

Question[a,b]			2014		2013			
2014	2013		Patients in CPC Practices	Patients in Comparison practices	Patients in CPC Practices	Patients in Comparison practices	Diff-in-diff (Pct. Pt.)	*p*-value
Q49	Q47	Clerks and receptionists at provider's office always treated patient with courtesy and respect	83.9	84.3	82.6	84.3	1.3	0.186
Attention to care from other providers								
Q40	Q38	If patient visited a specialist, provider always seemed informed and up-to-date about the care patient received from specialists	58.5	59.8	59.1	61.0	0.6	0.695
Q44	Q42	If patient takes prescription medicines, practice staff spoke with patient at each visit during the last 12 months about all prescription medications the patient was taking	87.3	86.1	86.1	86.1	1.3	0.156
Q52	Q49	If patient required a referral from provider to see a specialist, patient always easily got referral to a specialist the patient needed to see	76.3	74.6	77.2	79.4	3.9	0.041
Q54	Q51	If patient made an appointment to see a specialist, patient always easily got appointments with specialists	56.1	56.3	56.6	57.2	0.5	0.741
Q55	Q52	If patient made an appointment to see a specialist, provider talked with patient during the last 12 months about the cost of seeing a specialist	9.2	9.9	8.0	8.3	-0.5	0.585
Q56	Q53	If patient made an appointment to see a specialist, patient was worried or concerned during the last 12 months about the cost of seeing a specialist	19.6	20.5	20.7	21.2	-0.4	0.742
Q58	Q55	When patient saw specialist, specialist always knew the important information about patient's medical history	56.9	59.0	58.2	59.5	-0.8	0.568

Question[a,b]			2014		2013			
2014	2013		Patients in CPC Practices	Patients in Comparison practices	Patients in CPC Practices	Patients in Comparison practices	Diff-in-diff (Pct. Pt.)	*p*-value
N/A	Q57[d]	If patient stayed in a hospital overnight or longer in the last 12 months, patient saw doctor, nurse practitioner, or physician assistant in provider's office within two weeks after most recent hospital stay	n/a	n/a	69.8	64.9	4.9	0.002
N/A	Q58[d]	When patient saw provider within two weeks of most recent hospital stay, provider seemed informed and up-to-date about patient's hospital stay	n/a	n/a	94.6	95.6	-1.0	0.242
Q60[d]	N/A	If patient stayed in a hospital overnight or longer in the last 12 months, patient was contacted by provider's office within 3 days of most recent hospital stay	57.2	54.2	n/a	n/a	3.0	0.083
Q62[d]	N/A	If patient visited the emergency room or emergency department for care in the last 12 months, patient was contacted by provider's office within one week of most recent visit	54.8	50.0	n/a	n/a	4.9	0.002
Providers support patients in taking care of own health								
Q41	Q39	Someone in provider's office discussed with patient during the last 12 months specific goals for his/her health	59.7	57.4	58.6	60.9	4.5	0.000
Q42	Q40	Someone in provider's office asked the patient during the last 12 months whether there are things that make it hard for patient to take care of his/her health	35.6	34.4	32.8	35.0	3.5	0.005
Shared decision making								
Q34	Q32	If patient talked about starting/stopping a prescription medicine, provider talked a lot about the reasons patient might want to take the medicine	62.3	63.1	61.0	63.7	2.0	0.202

Question[a,b]			2014		2013			
2014	2013		Patients in CPC Practices	Patients in Comparison practices	Patients in CPC Practices	Patients in Comparison practices	Diff-in-diff (Pct. Pt.)	*p*-value
Q35	Q33	If patient talked about starting/stopping a prescription medicine, provider talked a lot about the reasons patient might not want to take a medicine	44.4	43.5	43.7	45.8	3.0	0.065
Q36	Q34	If patient talked about starting/stopping a prescription medicine, provider asked what patient thought was best	78.1	77.5	75.8	78.7	3.6	0.006
Q67[d,f]	N/A	If patient received care from provider for a chronic condition, s/he was always asked for her/his ideas or goals when making a treatment plan	35.9	35.9	n/a	n/a	0.1	0.957
Q68[d]	N/A	When patient received care from provider for a chronic condition, patient was always given a copy of her/his treatment plan	46.3	42.6	n/a	n/a	3.7	0.032
Patients' rating of providers and care								
Q37	Q35	Patient rating of provider as best provider possible (9-10, out of a maximum of 10)	75.6	76.3	74.9	76.2	0.6	0.621
Q50[d]	N/A	Compared to one year ago, patient feels that the care received by the provider was much better	18.1	17.4	n/a	n/a	0.8	0.322

Source: Mathematica analysis of the 2013 CPC patient survey and 2014 CPC patient survey, fielded by Mathematica.

[a] Question numbers highlighted in grey denote that the question is used to calculate the composite measure.

[b] The questions generally asked patients about their experiences in the past 12 months. We summarize survey questions that ask about "anyone in this provider's office" as "practice staff" in the question labels.

[c] We ran statistical analysis (OLS and logistic regression models) on weighted data to identify the predicted probability of CPC and comparison practice patients answering with the most favorable response. Because many questions are preceded by a screener question, predicted distributions are generated from patients who responded to that question. The composite measures are a summary score generated by patient-level responses to select questions following the CAHPS Clinician & Group Survey scoring instructions. The question numbers highlighted in grey are the 19 questions that are included in the composite measures. We created patient-level composite measures by averaging the non-missing responses to the appropriate questions for each composite measure. We then ran an OLS regression on patient-level composite measures to obtain CPC-wide composite measures. This methodology differs from the question-specific analysis, which uses a logit regression analysis to obtain predicted probabilities.

[d] Only questions asked in 2013 and 2014 were included in the difference-in-differences model. For questions asked in only one survey round, we calculated predicted probabilities and conducted t-tests to identify significant differences between CPC and comparison practice results. (There were eight questions asked in only one survey round: Q57 and Q58 in 2013, and Q21, Q50, Q60, Q62, Q67, and Q68 in 2014.)

[e] We calculated predicted probabilities from regression models that controlled for baseline practice characteristics (practice size, medical home recognition, whether the practice had one or more meaningful EHR users, and whether the practice was independent or owned by a medical group or health system), and characteristics of the practices' county or census tract (whether in a medically underserved area, Medicare Advantage penetration rate, percentage urban, and median household income); and baseline (2012) patient characteristics (age, gender, race, reason for Medicare eligibility, dual eligibility status, HCC score, number of annualized physician visits, number of annualized emergency room visits, number of annualized inpatient hospitalizations), and education status at the time of the survey. The models also included indicators for whether the respondent was a patient of a CPC or comparison practice, the survey year, and a term interacting these two indicators. We weighted estimates using practice-level nonresponse weights.

[f] The predicted probabilities for question 67 exclude the less than 5 percent of respondents who answered "No treatment plan was made"—in addition to missing responses.

FFS = fee-for-service.

6.3. Results

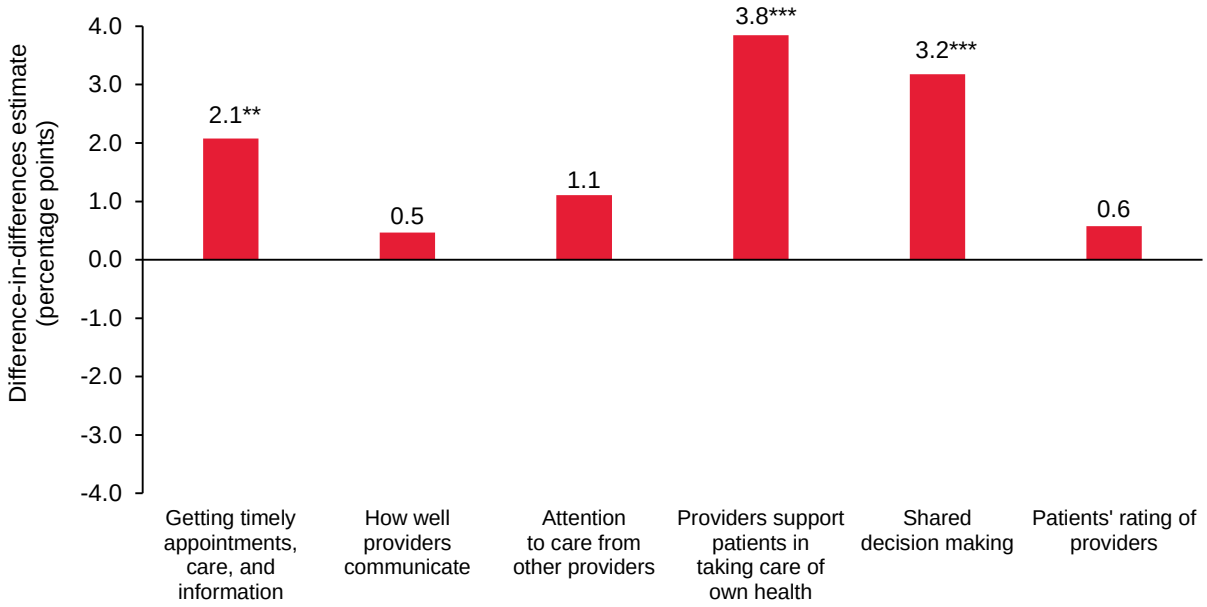
6.3.1. Composite measures

CPC-wide, there were small, statistically significant, favorable effects on the percentage of respondents choosing the most favorable responses for three of six CAHPS composite measures: (1) getting timely appointments, care, and information (2.1 percentage points, $p = 0.046$); (2) providers support patients in taking care of own health (3.8 percentage points, $p = 0.000$); and (3) shared decision making (3.2 percentage points, $p = 0.006$) (see Figure 6.1). These were driven by small (less than 2 percentage points) year-to-year improvements for CPC practices and small declines (less than 2 percentage points) for comparison practices (see Figure 6.2).

Despite CPC practices showing improvement over comparison practices in year-to-year change, only about half of CPC and comparison practice patients gave the most favorable ratings for getting timely appointments, care, and information and for providers supporting patients in taking care of own health, indicating areas for improvement.

There was smaller room for improvement for the other three composites for both CPC and comparison practices—how well providers communicate, attention to care from other providers, and patients' rating of providers—as more than 75 percent of patients at CPC and comparison practices provided the most favorable ratings. For these three domains, changes over time for CPC practices were similar to those for comparison practices, so CPC-comparison differences were not statistically significant (Table 6.2).

Figure 6.1. Estimated differences in the year-to-year improvement in six patient experience domains from 2013 to 2014 for CPC practices compared to comparison practices, sample of Medicare FFS patients CPC-wide

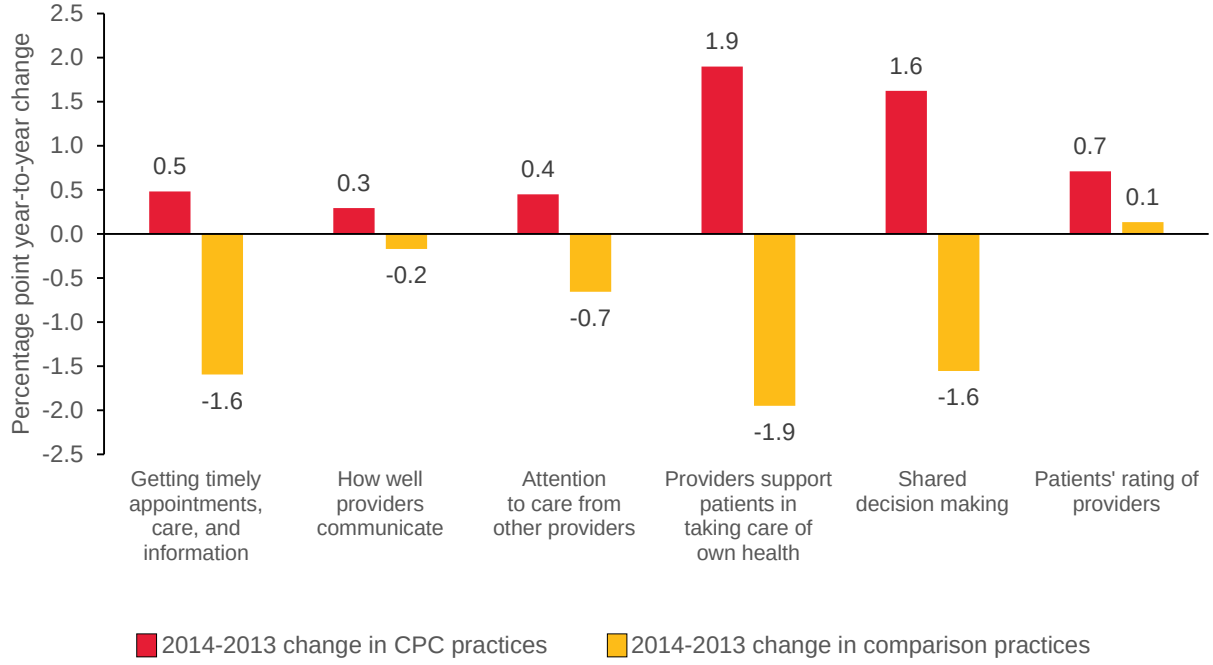


Source: Mathematica analysis of the 2013 CPC patient survey and 2014 CPC patient survey, fielded by Mathematica.

*/**/*** Statistically significant at the 0.10/0.05/0.01 level.

FFS = fee-for-service.

Figure 6.2. Estimated changes in the proportion of patients answering with the most favorable responses in six patient experience domains from 2013 to 2014, sample of Medicare FFS patients CPC-wide



Source: Mathematica analysis of the 2013 CPC patient survey and 2014 CPC patient survey, fielded by Mathematica.

FFS = fee-for-service.

To understand what factors were driving the composite measure results, we turn to the 19 questions that form the CAHPS composite measures. There were statistically significant and favorable effects for 5 of the 19 questions—a result of moderate year-to-year improvements for CPC practices, coupled with small declines over time for comparison practices. For two questions, changes from 2013 to 2014 in the proportion of CPC patients who provided the most favorable responses increased between 2 and 3 percentage points: (1) someone in the provider's office asked the patient during the last 12 months whether there are things that make it hard for the patient to take care of his or her health (increased 2.8 percentage points to 35.6 percent in 2014); and (2) if a patient talked about starting/stopping a prescription medicine, the provider asked what the patient thought was best (increased 2.3 percentage points to 78.1 percent in 2014). These two questions were in the providers support patients in taking care of own health and shared decision making domains, respectively. For three questions, the year-to-year increase among CPC patients was between 0.2 and 1.1 percentage points (one question each in getting timely appointments, care, and information; providers support patients in taking care of own health; and shared decision making domains). The year-to-year changes in CPC practices for the other 14 questions were not statistically different from comparison practices.

6.3.2. Question-specific results

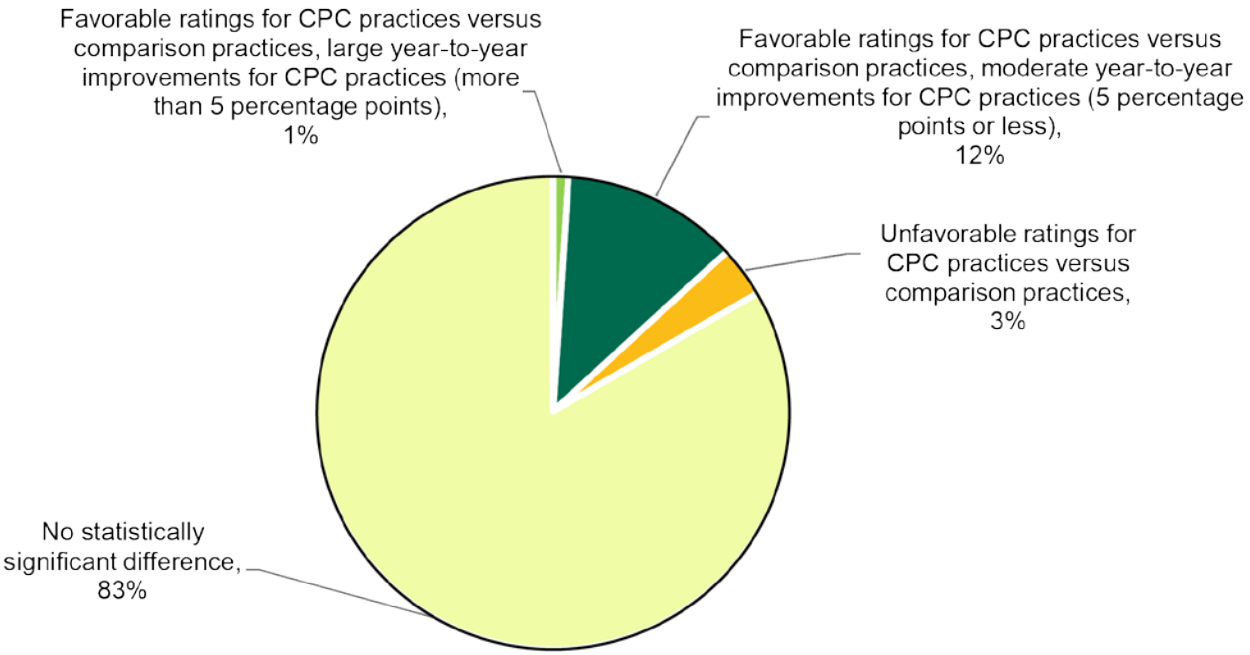
When looking more generally at all 36 questions asked in both survey rounds, the change in the proportion of patients giving the most favorable ratings of care over time were generally comparable for CPC and comparison practices, with slightly more differences favoring the CPC practices—generally of small magnitude—than we would expect by chance. We made 288 comparisons (36 questions in the six domains included in both survey rounds for each of the seven regions and the CPC-wide sample). Of these, 240, or 83 percent, showed no statistically significant difference between CPC and comparison practices. Thirty-eight, or 13 percent of the measures (versus the 5 percent expected to occur by chance), showed more favorable ratings of CPC than comparison practices, but year-to-year improvements for the CPC practices were generally small to moderate in size (5 percentage points or less) for 35 of these 38 measures, and larger than 5 percentage points for the remaining 3 measures. Three percent of the measures showed statistically significant unfavorable ratings for CPC versus comparison practices—about equal to what would be expected by chance (see Table 6.3, Figure 6.2, and Appendix E, Table E.2).

Table 6.3. Patient experience results: Distribution of effects for patients reporting the most favorable responses on 36 survey questions in seven regions and CPC-wide (288 total comparisons)

	Number of statistical tests	Percentage of statistical tests
Total number of statistical tests	288	100
Statistically significant favorable effect	**38**	**13.2**
Year-to-year decline for CPC practices	5	1.7
Less than 2 percentage point increase for CPC practices	9	3.1
2 to 5 percentage point increase for CPC practices	21	7.3
5 to 7 percentage point increase for CPC practices	3	1.0
Statistically significant unfavorable effect	**10**	**3.5**
Less than 2 percentage point year-to-year decline for CPC practices	6	2.1
2 to 5 percentage point decline for CPC practices	3	1.0
5 to 7 percentage point decline for CPC practices	1	0.3
No statistically significant effect	**240**	**83.3**

Note: Difference-in-differences estimates are considered statistically significant if $p < 0.10$.

Figure 6.3. Distribution of difference-in-differences results: The difference in the change in the proportion of patients reporting the most favorable responses on 36 survey questions from 2013 to 2014 between CPC and comparison practices, including estimates CPC-wide and for the seven regions



Source: Mathematica analysis of the 2013 CPC patient survey and 2014 CPC patient survey, fielded by Mathematica.

Reflecting larger issues with health care delivery, CPC and comparison practices both have sizeable opportunities for improvement. In 2014, for example, 43 percent of patients in both groups answered that, when they telephoned their provider's office for care needed right away, they usually got an appointment that same day, and 29 percent of patients answered that they always saw the provider within 15 minutes of appointment time when they had an appointment—two measures of access. About a third of patients reported that practice staff spoke with them about a personal, family, mental, emotional, or substance abuse problem in the past year, suggesting the need for more screening for mental health issues. About a third of patients reported that someone at the practice had asked whether there are things that make it hard for the patient to take care of his or her health, suggesting room for more patient engagement. Ratings were higher, but still showed room for improvement, for many other questions, including some on which CPC practices had statistically significant improvements relative to comparison practices.

Despite giving responses that indicate opportunities for improvement in many aspects of care, patients remain pleased with their providers. Overall, 76 percent of both CPC and comparison practice patients rated their provider as a 9 or 10 out of 10 in 2014, a slight (less than one percentage point) improvement from 2013. When asked to compare the care they received in

the last 12 months to the care they received at the practice in the previous year, a comparable proportion of patients in both CPC and comparison practices (18 and 17 percent, respectively) reported that the care they received from the provider was much better than in the prior year.

6.3.3. Region-specific findings

In addition to analyzing the differences in the changes in patient experience over time between all CPC practices and comparison practices, we explored the changes in patient experience for CPC practices in each of the seven CPC regions—Arkansas, New York: Capital district Hudson Valley, Oregon, Colorado, New Jersey, Ohio/Kentucky: Cincinnati-Dayton, Oklahoma: Greater Tulsa—against their respective comparison practices (see Appendix Tables 1a-1g). Due to the large number of comparisons, we treat these results as exploratory only. Of the 42 tests (6 comparisons in each of the 7 regions), 8, or 19 percent of the difference-in-differences estimates were statistically significant and favorable to CPC practices—more than the 5 percent we would expect by chance. One estimate (or 2.3 percent) and about what we would expect by chance was statistically significant and unfavorable to CPC practices.

There was some variability across regions. Four regions had statistically significant and favorable differences for CPC practices compared to comparison practices: Arkansas (for three of six composite measures); New York (for two composites); Ohio/Kentucky (for one composite); and Oregon (for one composite). One region—New Jersey—had one statistically significant favorable difference and one statistically significant unfavorable difference. Two regions—Colorado and Oklahoma—were comparable for all six composite measures, having no statistically significant differences between CPC and comparison practices. These findings are descriptive, however, and do not formally test whether different regions had better results.

6.4. Discussion

Two years after CPC began, CPC practices showed small improvements in the proportion of patients giving the most favorable ratings for three of the six CAHPS composite measures relative to comparison practices, driven by slightly better year-to-year changes in the proportion of patients giving the most favorable ratings of care on selected questions included in the composites than expected by chance. There were also slightly more favorable effects than expected by chance, again of small magnitude, when all 44 questions (the 36 included in both survey rounds and the 8 included in only one round) are considered. For the most part, the proportion of patients giving the most favorable ratings was fairly comparable for the CPC and comparison practices. These results suggest that changes in care delivery during the first two years of CPC have made minor improvements in patient experience, and did not negatively affect it.

Prior studies found mixed effects of PCMH adoption on patient experience, measured using different patient survey instruments. Four studies that looked at the impact of medical home transformation on patient experience of care found no statistically significant effects on patient experience one to two years after the intervention began (Jaén et al. 2010; Maeng et al. 2013; Heyworth et al. 2014; Reddy et al. 2015). Similar to these CPC findings two years into the initiative, three studies found statistically significant, favorable, but generally relatively small or isolated, effects in some dimensions of patient experience with care (Reid et al. 2009; Reid et al. 2010; Kern et al. 2013). Kern et al. (2013) found somewhat comparable results, but that study

did not have a comparison group to net out any secular trends that may have affected patient experience. The study found statistically significant improvement at the 5 percent level in the proportion of respondents giving the most favorable rating in the access to care domain (from 61 to 69 percent) and statistically significant improvement at the 10 percent level in experience with office staff (from 72 to 78 percent). The proportion of respondents giving the most favorable rating in the domain for follow-up with test results showed a statistically significant decline at the 10 percent level, from 76 to 69 percent. There were no effects in the other dimensions of patient experience they measured: communication and relationships, disease management, doctor communication, and overall rating of the doctor.

The main limitation to this analysis of patient experience in CPC is that we could not obtain a list of patients to sample in time to survey patients before the initiative began. Therefore, the difference-in-differences estimates might be an understatement of the true effects of CPC because CPC practices may have already made some improvements between the start of CPC and the first survey round that began eight months later. Alternatively, these estimates could be an overstatement to the extent that changes (and possible disruptions) during the first year of CPC led to short-term negative effects on patients in CPC practices. Indeed, the proportions of patients giving the most favorable responses to CPC practices were lower than for comparison practices for 35 of 38 questions in the 2013 survey (generally 1 to 3 percentage points lower) and for all six composite measures. In addition, the comparison group was not chosen experimentally; therefore, differences between patient ratings over time for the CPC and comparison practices may reflect baseline differences between the groups of patients, in addition to the effects of CPC.

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7. WHAT WERE CPC'S IMPACTS ON MEDICARE EXPENDITURES, SERVICE USE, AND QUALITY OF CARE OVER THE FIRST 24 MONTHS?

CPC is also expected to lower Medicare expenditures and service use and improve the quality of care. In this chapter, we describe CPC's effects during the first 24 months of CPC on claims-based health care expenditures, service use, and quality of care, for Medicare FFS patients in CPC versus comparison practices. The chapter focuses on impacts for CPC as a whole, with regional analyses reported in Appendix F. (In contrast to the program years discussed in earlier chapters, in this chapter, year 1 results reflect CPC's first 12 months [October 2012 through September 2013], and year 2 results reflect months 13 to 24 [October 2013 through September 2014].)

7.1. Overview of findings

Although we did not expect CPC to have effects in the first 24 months, CPC appears to have reduced total monthly Medicare expenditures without care management fees by a small but statistically significant $11 (with the 90 percent confidence interval ranging from -$1 to -$21, $p = 0.07$) per beneficiary per month (PBPM), or 1 percent (Tables 7.1A and 7.2), when results for all seven regions are combined. A one-sided equivalence test does not support the conclusion that reductions in expenditures without fees exceeded the $18 PBPM payments ($p = 0.87$). We tested many alternative specifications of the model, outcome variable, and sample, and we also conducted a Bayesian analysis (where we allowed the estimated effects in a given region to depend in part on the CPC-wide effects) and generally found similar results.

For high-risk patients (those with the highest quartile of 2012 HCC scores), the cumulative decline during the first two years in average monthly Medicare expenditures without care management fees relative to the comparison group was larger in magnitude and about the same percentage impact as among all patients—although not statistically significant: $18 PBPM or 1 percent (Table 7.1B and Table 7.2). Effects for the high-risk subgroup and effects for all patients did not vary systematically with any practice characteristics.

The reductions in Medicare expenditures without fees were driven by reductions in both inpatient and skilled nursing facility expenditures. While not a large component of Medicare expenditures, there was also a 3 percent reduction in primary care visits ($p < 0.01$). The overall expenditure reductions appear to be driven by four CPC regions—New Jersey, New York, Oklahoma, and Oregon, though the estimated effects were statistically significant only in New Jersey and Oklahoma.

Because we follow beneficiaries even if the practice no longer receives fees for them, the average PBPM fee paid was $18 (less than the average of $20 CMS paid for attributed beneficiaries). While the $11 reduction in Medicare expenditures for service use offset more than half of CPC's care management fees, it is highly unlikely that CPC generated net savings. The change in average expenditures including these fees was $7 ($p = 0.27$, 90 percent CI -$3, $17). A one-sided equivalence test does not support the conclusion that reductions in expenditures without fees exceeded the $18 PBPM payments ($p = 0.87$). Our Bayesian analysis suggests that, although there is a 98.6 percent probability that CPC generated some reduction in Medicare

expenditures (excluding the care management fee), the likelihood that those savings were greater than the $18 per member per month fee paid is only 4 percent.

Finally, there were minimal effects on the claims-based quality-of-care process and outcome measures we examined (Tables 7.3A and 7.3B). The only statistically significant effects for the two summary measures of process-of-care for patients with diabetes were an 11 percent improvement in year 2 in one summary measure (not receiving any of the four recommended tests we tracked for diabetes) among all beneficiaries with diabetes ($p = 0.03$), and roughly 10 percent improvements in the other summary measure (receiving all four recommended tests for diabetes) among high-risk beneficiaries with diabetes ($p < 0.01$ in year 1 and $p = 0.01$ in year 2). There were no significant effects on any of the individual quality-of-care process measures for diabetes or ischemic vascular disease among all beneficiaries with the conditions, although among high-risk beneficiaries with diabetes, there were statistically significant improvements of 4 percent in two of the four individual diabetes measures—eye exam in year 1, and urine protein testing in both years 1 and 2 ($p < 0.05$ for each estimate).

Table 7.1a. Summary table of percentage impacts on Medicare FFS expenditures and service utilization over the first two years of CPC: CPC-wide and by region (all attributed beneficiaries)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Total Medicare expenditures ($ per beneficiary per month)								
Without CPC care management fees								
Year 1	**-2%**[a]	0%	1%	**-5%***[a]	-2%	*3%**	**-6%***[a]	-2%
Year 2	-1%	1%	-1%	**-3%***[a]	-3%	5%	-1%	-3%
Year 1 and Year 2 combined	**-1%***[a]	0%	0%	**-4%***[a]	-2%	*4%**	**-3%**[a]	-3%
With CPC care management fees								
Year 1	0%	2%	3%	**-3%***[a]	0%	*6%***	**-4%***[a]	1%
Year 2	1%	*3%**	1%	-2%	0%	*7%***	1%	-1%
Year 1 and year 2 combined	1%	3%	2%	-2%	0%	*7%***	-1%	0%
Expenditures by type of service ($ per beneficiary per month)								
Inpatient								
Year 1	**-4%****	-1%	1%	**-8%*****	**-8%***	*7%***	**-11%*****	-4%
Year 2	-1%	2%	2%	**-7%****	**-7%****	8%	0%	-3%
Year 1 and year 2 combined	**-2%***	1%	1%	**-7%*****	**-7%****	*8%****	**-5%****	-3%
Physician								
Year 1	0%	-1%	3%	**-2%***	*3%***	*5%****	-1%	-2%
Year 2	0%	**-4%***	0%	1%	1%	*6%****	-2%	-1%
Year 1 and year 2 combined	0%	**-3%***	1%	-1%	2%	*6%**	-2%	-1%
Outpatient								
Year 1	-1%	1%	-4%	**-5%***	0%	2%	-1%	-2%
Year 2	-2%	1%	**-6%***[a]	-6%	2%	3%	2%	**-6%****
Year 1 and Year 2 combined	-1%	1%	-5%	**-6%***	1%	2%	1%	**-5%***
Skilled nursing facility								
Year 1	**-6%****	-8%	-2%	-6%	3%	**-11%****	**-18%*****	2%
Year 2	**-6%****	-1%	-7%	-7%	-3%	-2%	-7%	**-10%***
Year 1 and year 2 combined	**-6%****	-4%	-4%	**-7%***	-1%	-7%	**-12%****	-5%
DME								
Year 1	1%	2%	-2%	*11%**	-2%	2%	-4%	1%
Year 2	-2%	-5%	-4%	7%	-4%	0%	0%	-5%
Year 1 and year 2 combined	-1%	-1%	-3%	9%	-3%	1%	-2%	-2%
Hospice								
Year 1	3%	22%	12%	6%	-13%	-13%	-6%	6%
Year 2	3%	22%	-7%	1%	4%	-12%	0%	9%
Year 1 and year 2 combined	3%	22%	0%	3%	-4%	-12%	-2%	8%
Home health								
Year 1	-2%	2%	-1%	**-10%****	-5%	*8%**	**-5%***	3%
Year 2	*5%***	*25%****	0%	0%	-2%	*12%****	-3%	4%
Year 1 and year 2 combined	2%	*13%****	-1%	-4%	-3%	*10%****	-4%	3%

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Service utilization (annualized rate per 1,000 beneficiaries)								
Hospitalizations								
Year 1	-2%	1%	3%	**-5%***	**-6%*****	5%	**-5%****	**-5%***
Year 2	-2%	1%	-1%	-3%	**-7%*****	4%	1%	-4%
Year 1 and year 2 combined	-2%	1%	1%	-4%	**-6%*****	4%	-2%	-4%
Outpatient ED visits								
Year 1	-1%	-1%	1%	1%	2%	2%	**-5%****	-3%
Year 2	-1%	1%	-3%	1%	*6%***	-2%	-1%	**-5%***
Year 1 and year 2 combined	-1%	0%	-1%	1%	4%	0%	**-3%***	**-5%***
Total ED visits								
Year 1	-1%	-1%	1%	-1%	-1%	2%	**-5%****	-4%
Year 2	-1%	1%	-3%	0%	2%	-1%	-1%	**-5%***
Year 1 and year 2 combined	-1%	0%	-1%	0%	1%	0%	-2%	**-4%***
Observation stays								
Year 1	2%	1%	11%	3%	-2%	*12%***	-5%	5%
Year 2	*8%***	13%	14%	-5%	14%	5%	*8%***	6%
Year 1 and year 2 combined	*5%***	7%	13%	-2%	5%	*8%**	3%	5%
Primary care visits								
Year 1	**-2%*****	**-4%****	*3%**	**-7%*****	-1%	-1%	-1%	**-5%****
Year 2	**-3%*****	**-8%*****	1%	-3%	**-10%****	1%	1%	-3%
Year 1 and year 2 combined	**-3%*****	**-6%*****	2%	**-5%****	**-6%*****	0%	0%	-4%
Specialist visits								
Year 1	0%	1%	1%	**-4%*****	1%	3%	-2%	-1%
Year 2	0%	1%	-1%	**-2%****	0%	*6%***	0%	-1%
Year 1 and year 2 combined	0%	1%	0%	**-3%*****	1%	*4%***	-1%	-1%

Source: Medicare claims data for the period October 2011–September 2014.

Note: Impact estimates are based on a difference-in-differences analysis and reflect the difference in the regression-adjusted average outcomes for beneficiaries in CPC practices for a specific year compared with baseline relative to the same difference over time for beneficiaries in matched comparison practices. Percentage impacts are calculated by dividing the impact estimate by what the CPC group mean is projected to have been in the absence of CPC (that is, the unadjusted CPC group mean minus the CPC impact estimate). **Red shading** with white *italicized text* signifies an annual estimate was unfavorable and statistically significant; **green shading** with **bolded text** signifies an annual estimate was favorable and statistically significant.

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service; DME = durable medical equipment; ED = emergency department.

Table 7.1b. Summary table of percentage impacts on Medicare FFS expenditures and service utilization over the first two years of CPC: CPC-wide and by region (attributed beneficiaries in the highest-risk quartile)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Total Medicare expenditures ($ per beneficiary per month)								
Without CPC care management fees								
Year 1	**-2%***	-3%	0%	**-4%***	-5%	*5%***	**-9%*****	0%
Year 2	0%	1%	-1%	-3%	-2%	*8%****	-2%	2%
Year 1 and year 2 combined	-1%	-1%	0%	**-4%***	-4%	*7%****	**-6%****	1%
With CPC care management fees								
Year 1	-1%	-1%	3%	-2%	-3%	*7%****	**-7%*****	2%
Year 2	2%	2%	2%	-2%	-1%	*10%****	0%	4%
Year 1 and year 2 combined	1%	1%	2%	-2%	-2%	*9%****	-4%	3%
Expenditures by type of service ($ per beneficiary per month)								
Inpatient								
Year 1	**-6%*****	-6%	-3%	-5%	**-12%***	*8%***	**-14%*****	-5%
Year 2	0%	0%	-1%	-7%	-6%	*13%***	1%	4%
Year 1 and year 2 combined	**-3%***	-3%	-2%	-6%	**-9%****	*10%****	**-7%***	-1%
Physician								
Year 1	0%	**-5%***	2%	-2%	2%	*8%****	-3%	2%
Year 2	0%	-6%	-2%	1%	-1%	*9%****	-4%	6%
Year 1 and Year 2 combined	0%	**-5%****	0%	-1%	0%	*8%****	**-4%***	4%
Outpatient								
Year 1	1%	5%	-6%	-4%	3%	8%	-3%	0%
Year 2	2%	6%	4%	1%	5%	5%	-3%	-2%
Year 1 and year 2 combined	1%	5%	-1%	-1%	4%	6%	-3%	-1%
Skilled nursing facility								
Year 1	-4%	-7%	14%	**-9%***	1%	-9%	**-20%*****	10%
Year 2	**-6%****	-5%	-3%	**-11%***	-6%	3%	-9%	-8%
Year 1 and year 2 combined	**-6%***	-6%	4%	**-10%****	-3%	-3%	**-14%****	0%
DME								
Year 1	2%	-1%	-3%	*17%***	-1%	10%	-2%	8%
Year 2	1%	-5%	**-10%***	*34%***	-3%	16%	2%	-3%
Year 1 and year 2 combined	2%	-3%	**-7%***	*24%****	-2%	13%	0%	3%
Hospice								
Year 1	6%	*23%**	27%	5%	-10%	-9%	-10%	17%
Year 2	6%	24%	4%	3%	19%	-5%	2%	-3%
Year 1 and year 2 combined	6%	*24%**	13%	3%	3%	-7%	-4%	5%
Home health								
Year 1	-1%	*8%**	1%	-6%	-3%	3%	**-6%****	4%
Year 2	*6%***	*25%****	8%	5%	3%	5%	-4%	7%
Year 1 and year 2 combined	3%	*16%****	4%	-1%	0%	4%	-5%	5%

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Service utilization (annualized rate per 1,000 beneficiaries)								
Hospitalizations								
Year 1	-2%	-1%	7%	-4%	**-9%*** **	3%	**-6%** **	-3%
Year 2	0%	0%	-1%	-2%	**-7%** **	7%	1%	1%
Year 1 and year 2 combined	-1%	0%	3%	-3%	**-8%*** **	5%	-3%	-1%
Outpatient ED visits								
Year 1	-1%	-3%	3%	4%	7%	-2%	**-10%*** **	0%
Year 2	0%	-2%	-1%	*7%**	*9%**	-4%	-5%	0%
Year 1 and year 2 combined	0%	-2%	1%	6%	*8%**	-3%	**-8%*** **	0%
Total ED visits								
Year 1	-1%	-2%	5%	1%	0%	-1%	**-8%*** **	-1%
Year 2	0%	0%	-2%	3%	4%	-2%	-3%	0%
Year 1 and year 2 combined	-1%	-1%	1%	2%	2%	-1%	**-6%** **	0%
Observation stays								
Year 1	4%	4%	0%	6%	15%	*18%**	-12%	5%
Year 2	*9%**	21%	6%	-1%	20%	3%	1%	9%
Year 1 and year 2 combined	6%	12%	3%	2%	16%	9%	-5%	7%
Primary care visits								
Year 1	**-3%** **	**-6%*** **	3%	-4%	-3%	1%	-2%	**-6%** **
Year 2	**-2%** **	**-8%*** **	3%	-3%	**-9%** **	2%	1%	0%
Year 1 and year 2 combined	**-3%** **	**-7%*** **	3%	-4%	**-6%** **	2%	0%	-3%
Specialist visits								
Year 1	-1%	-2%	0%	**-3%** **	-2%	*6%***	**-4%** **	2%
Year 2	0%	-1%	-3%	-2%	**-4%** **	*7%***	-2%	4%
Year 1 and year 2 combined	0%	-2%	-1%	**-3%** **	**-3%** **	*7%***	**-3%**	3%

Source: Medicare claims data for the period October 2011–September 2014.

Note: Impact estimates are based on a difference-in-differences analysis and reflect the difference in the regression-adjusted average outcomes for beneficiaries in CPC practices for a specific year compared with baseline relative to the same difference over time for beneficiaries in matched comparison practices. Percentage impacts are calculated by dividing the impact estimate by what the CPC group mean is projected to have been in the absence of CPC (that is, the unadjusted CPC group mean minus the CPC impact estimate). **Red shading** with white, *italicized text* signifies an annual estimate was unfavorable and statistically significant; **green shading** with **bolded text** signifies an annual estimate was favorable and statistically significant.

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service; DME = durable medical equipment; ED = emergency department.

Table 7.2. Regression-adjusted means and estimated difference-in-differences impact of CPC on Medicare FFS expenditures, hospitalizations, and outpatient ED visits over the first two years of CPC: Cumulative two-year estimates CPC-wide

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Compari-son group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Compari-son group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
Total Medicare expenditures ($ per beneficiary per month)												
Pooled												
Without CPC care management fees												
Baseline	$629	$631	—	—	—	—	$1,423	$1,413	—	—	—	—
Postintervention	$784	$798	-$11*	$6	-1%	0.074	$1,479	$1,486	-$18	$18	-1%	0.325
With CPC care management fees												
Baseline	$629	$631	—	—	—	—	$1,424	$1,413	—	—	—	—
Postintervention	$802	$798	$7	$6	1%	0.266	$1,508	$1,486	$11	$18	1%	0.535
Hospitalizations												
Baseline	255	256	—	—	—	—	613	608	—	—	—	—
Postintervention	301	307	-5	3	-2%	0.129	613	616	-8	9	-1%	0.357
Outpatient ED visits												
Baseline	435	448	—	—	—	—	829	841	—	—	—	—
Postintervention	479	495	-4	4	-1%	0.397	829	843	-3	11	0%	0.824
Number of Observations	3,578,630						917,020					

Source: Medicare claims data for the period October 2011–September 2014.

Note: Impact estimates and predicted means are regression adjusted for baseline patient characteristics (including HCC scores) and baseline practice characteristics. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for beneficiaries in CPC practices in year 1 and year 2 combined together, compared to baseline, relative to the same difference over time for beneficiaries in matched comparison practices.

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service; ED = emergency department.

Table 7.3a. Summary table of percentage impacts on selected quality-of-care process and outcome measures over the first two years of CPC: CPC-wide and by region (all attributed beneficiaries)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Quality of care								
Among patients with diabetes— HbA1c test								
Year 1	1%	5%	-4%	*-3%**	**5%****	-2%	-2%	**5%****
Year 2	0%	-2%	1%	-2%	1%	-1%	**6%***	0%
Among patients with diabetes—lipid test								
Year 1	0%	0%	0%	-1%	**3%****	-1%	-1%	**2%***
Year 2	1%	0%	2%	2%	-1%	0%	0%	3%
Among patients with diabetes—eye exam								
Year 1	2%	2%	4%	0%	2%	3%	-5%	**6%***
Year 2	2%	2%	**6%***	*-7%***	3%	2%	4%	3%
Among patients with diabetes—urine protein test								
Year 1	1%	-1%	4%	4%	2%	1%	-5%	3%
Year 2	3%	-3%	5%	4%	4%	6%	-4%	**6%***
Among patients with ischemic vascular disease—lipid test								
Year 1	1%	4%	0%	-1%	**3%****	-1%	3%	-1%
Year 2	0%	1%	0%	0%	2%	-1%	2%	1%
Among patients with diabetes—all 4 tests performed								
Year 1	4%	13%	7%	4%	5%	4%	*-21%****	**12%****
Year 2	4%	2%	8%	-5%	8%	7%	-2%	7%
Among patients with diabetes—none of the 4 tests performed								
Year 1	-3%	-2%	17%	10%	**-31%****	32%	9%	**-28%****
Year 2	**-11%****	**-15%***	0%	-17%	-18%	-9%	0%	**-24%***
Continuity of care								
Percentage of PCP visits at attributed practice								
Postintervention	0%	3%	2%	2%	0%	-1%	-3%	-3%
Percentage of all visits at attributed practice								
Postintervention	1%	4%	**6%***	1%	-1%	-1%	-3%	-1%
Bice-Boxerman Index based on PCP visits								
Postintervention	0%	**7%****	4%	0%	-1%	*-3%**	-3%	*-5%***
Bice-Boxerman Index based on all visits								
Postintervention	0%	**6%****	4%	0%	0%	-2%	*-4%**	-2%
Transitional care and quality-of-care outcomes								
Likelihood of 14-day followup visit								
Year 1	0%	*-4%**	3%	1%	**4%****	-2%	-2%	2%
Year 2	-1%	-3%	0%	*-2%**	1%	-1%	0%	-1%
ACSC admissions								
Year 1	1%	6%	-1%	-3%	-4%	*7%**	-4%	3%
Year 2	1%	8%	-8%	1%	0%	0%	4%	3%

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Likelihood of 30-day readmission								
Year 1	-3%	3%	-7%	-3%	-4%	-6%	-7%	0%
Year 2	-1%	7%	**-10%***	-3%	1%	5%	-1%	-7%
Likelihood of an ED revisit within 30 days of an outpatient ED visit								
Year 1	-1%	**-8%****	7%	6%	4%	11%**	**-11%****	-5%
Year 2	1%	-1%	6%	6%	8%	9%**	-6%	**-7%***

Source: Medicare claims data for the period October 2010–September 2014.

Note: For quality-of-care process measures and continuity of care measures, statistically significant estimates (**bolded text**, **shaded green**) are favorable, implying Improvement in care quality, and statistically significant estimates *(italicized white text*, **shaded red**) are unfavorable, implying a deterioration in care quality. For most measures, positive estimates are favorable and negative estimates are unfavorable, but for four measures (none of the four tests performed for patients with diabetes, ACSC admissions, likelihood of 30-day readmission, and likelihood of ED revisit), negative estimates are favorable and positive estimates are unfavorable. Impact estimates are based on a difference-in-differences analysis that adjusts for baseline patient characteristics (including HCC scores) and baseline practice characteristics.

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

ACSC = ambulatory care sensitive condition; ED = emergency department; PCP = primary care physician.

Table 7.3b. Summary table of percentage impacts on selected quality-of-care process and outcome measures over the first two years of CPC: CPC-wide and by region (attributed beneficiaries in the highest-risk quartile)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Quality of care								
Among patients with diabetes—HbA1c test								
Year 1	1%	5%	-9%	-4%	**9%****	0%	-2%	**4%***
Year 2	-1%	-2%	-4%	-4%	3%	-1%	0%	1%
Among patients with diabetes—lipid test								
Year 1	1%	1%	-4%	1%	**4%****	0%	-4%	**4%***
Year 2	0%	-2%	3%	3%	-1%	1%	*-6%***	**7%****
Among patients with diabetes—eye exam								
Year 1	**4%****	4%	11%	-3%	3%	6%	-5%	**15%*****
Year 2	3%	4%	**11%***	*-13%****	**9%****	1%	5%	6%
Among patients with diabetes—urine protein test								
Year 1	**4%****	-1%	**9%****	3%	**11%****	**7%***	2%	-1%
Year 2	**4%****	1%	3%	8%	6%	5%	-2%	**8%****
Among patients with ischemic vascular disease—lipid test								
Year 1	2%	6%	-1%	-1%	**4%***	3%	2%	1%
Year 2	1%	2%	-1%	0%	**6%*****	-1%	-2%	-1%
Among patients with diabetes—all 4 tests performed								
Year 1	**10%*****	**19%***	14%	7%	**21%*****	10%	*-16%**	**21%****
Year 2	**9%****	17%	8%	2%	**20%****	5%	-2%	**15%***
Among patients with diabetes—none of the 4 tests performed								
Year 1	-7%	-11%	47%	28%	-33%	-2%	-4%	**-30%***
Year 2	-11%	-11%	-14%	2%	-23%	-14%	1%	-30%
Continuity of care								
Percentage of PCP visits at attributed practice								
Postintervention	0%	2%	0%	4%	-1%	-1%	-2%	-2%
Percentage of all visits at attributed practice								
Postintervention	0%	3%	2%	2%	-1%	1%	-3%	-1%
Bice-Boxerman Index based on PCP visits								
Postintervention	0%	**8%****	4%	0%	-1%	-3%	-2%	*-7%****
Bice-Boxerman Index based on all visits								
Postintervention	0%	6%	2%	0%	-1%	-1%	-3%	*-4%**
Transitional care and quality-of-care outcomes								
Likelihood of 14-day followup visit								
Year 1	-1%	*-5%**	2%	-2%	**6%****	-1%	-2%	2%
Year 2	-2%	-4%	-2%	*-4%**	2%	1%	-3%	2%
ACSC admissions								
Year 1	2%	4%	-4%	3%	-3%	*11%***	-4%	4%
Year 2	3%	4%	-11%	8%	3%	*12%**	-1%	7%

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Likelihood of 30-day readmission								
Year 1	-1%	6%	6%	2%	-1%	-4%	**-12%****	6%
Year 2	2%	6%	-6%	4%	9%	4%	-1%	-6%
Likelihood of an ED revisit within 30 days of an outpatient ED visit								
Year 1	0%	**-8%***	*27%****	9%	1%	7%	**-13%****	-4%
Year 2	1%	-3%	*21%***	13%	4%	7%	**-12%****	-6%

Source: Medicare claims data for the period October 2010–September 2014.

Note: For quality-of-care process measures and continuity of care measures, statistically significant, estimates (**bolded text**, **shaded green**) are favorable, implying Improvement in care quality, and statistically significant estimates (*italicized white text,* **shaded red**) are unfavorable, implying a deterioration in care quality. For most measures, positive estimates are favorable and negative estimates are unfavorable, but for four measures (none of the four tests performed for patients with diabetes, ACSC admissions, likelihood of 30-day readmission, and likelihood of ED revisit), negative estimates are favorable and positive estimates are unfavorable. Impact estimates are based on a difference-in-differences analysis that adjusts for baseline patient characteristics (including HCC scores) and baseline practice characteristics.

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

ACSC = ambulatory care sensitive condition; ED = emergency department; PCP = primary care physician.

7.2. Methods

Our analysis compared changes in outcomes between the period before CPC began (baseline) and the period after it began for attributed Medicare FFS patients in CPC practices to changes over the same time period for beneficiaries attributed to comparison practices. We use the year before CPC as the baseline period and examined changes between this period and the two years after CPC began in mean outcomes per attributed Medicare beneficiary per month.

We used propensity-score matching to select seven comparison groups—one for each region's CPC practices. Practices in the comparison group for each region were chosen from a pool comprised of practices both within the same region and from similar nearby regions, none of which were participating in CPC. Table 7.4 lists the seven CPC regions and their matched external areas.

Table 7.4. CPC regions and comparison group external regions

CPC region	Comparison group external regions
Arkansas	Tennessee
New York: Capital district Hudson Valley region	Western and central New York, New Jersey, and Connecticut
Oregon	Idaho and Washington
Colorado	Utah, Kansas, and selected counties in New Mexico
New Jersey	Western and central New York and Connecticut
Ohio/Kentucky: Cincinnati-Dayton region	Remaining counties in Ohio
Oklahoma: Greater Tulsa region	Remaining counties in Oklahoma

We selected comparison practices from the pool of potential comparison practices using a propensity-score model that matched CPC and comparison practices on a wide variety of practice characteristics (such as status as a National Committee for Quality Assurance [NCQA]-recognized or state-recognized medical home, number of clinicians, and the presence of a Medicare-defined meaningful user of EHR); market characteristics (such as household income of the practice's zip code); and patient characteristics of the practice's attributed Medicare beneficiaries (such as their demographic characteristics and Medicare cost and service use before CPC). We then implemented a technique called *full matching* to form matched sets that contain one CPC and one or more comparison practices or one comparison practice and multiple CPC practices. A match for a given CPC practice was identified whenever the propensity score for a potential comparison practice fell within a prespecified range around the CPC practice's propensity score. Thus, a practice can serve as a comparison for multiple CPC practices.

We selected comparison practices from those that had applied to CPC in the same regions as the CPC practices but had not been selected by CMS, as well as from practices in nearby areas that were not part of the CPC regions but were considered by the research team and CMMI to have reasonably similar characteristics to the CPC region, to be close by geographically, and to have enough practices for matching. We call the first group—nonselected applicants to CPC—the internal comparison group. We included them in the comparison practice pool because they had expressed the same willingness to participate in the initiative as the selected practices and, therefore, were likely to share the same motivation (an unobserved characteristic) to provide enhanced primary care to beneficiaries. In addition, because these nonselected practices are in

the same region as the CPC practices, they are subject to the same regional conditions (such as practice patterns and health care markets) as the CPC practices. Therefore, including them helps account for regional factors that could affect outcomes. A typical evaluation would not choose nonselected practices for its comparison group out of concern that they were functioning poorly compared to those that had been selected, or might be contaminated due to spillover benefits of CPC, because about a quarter of comparison practices share the same owner as CPC practices. However, CMS did not score practices based on their pre-CPC outcomes or approaches to providing different aspects of primary care when they selected practices (and our subsequent analysis showed that the application score was not related to Medicare expenditure or service use outcomes); moreover, through the propensity-score matching process, we could ensure that the comparison group had similar values for two of the measures that CMS weighted heavily when scoring practices' applications that might be related to subsequent performance: meaningful use of EHRs and medical-home designation. We also mitigate concerns about the internal comparison group by running sensitivity analyses that include only beneficiaries located outside the CPC region. Comparison practices selected from outside the CPC region are not subject to selection bias resulting from not being selected during the application process, nor are they likely to benefit from spillover of CPC, but we do not know which of them would have had the motivation to improve care delivery demonstrated by applying to CPC, and there are potentially unobserved differences in market factors between the CPC regions and the external comparison regions that could affect outcomes.

To assure that comparison practices were similar to CPC practices at baseline, any practice that was participating in a CMS-sponsored shared savings program in 2012 was excluded from the potential comparison group. However, about 15 percent of comparison practices (ranging from 3 percent in Oklahoma to 29 percent in New Jersey) joined a CMS sponsored initiative by the end of 2014; most of the CMS-sponsored initiatives that comparison practices joined were shared savings programs such as ACOs. We do not believe this approach is a shortcoming but rather ensures the evaluation answers the question of how CPC alters outcomes compared to usual care. Thus, our impact estimates capture how Medicare FFS beneficiaries fare under CPC versus if they had been served absent CPC.

Appendix G shows the similarity between the CPC and comparison practices before CPC began on a range of market-, practice-, and patient-level characteristics. It also shows the number of matched comparison practices that were drawn from the same region and the number from external regions.

Throughout this section, as in other sections of this report, we do not adjust significance levels to account for the numerous hypothesis tests conducted, because we do not want to increase the likelihood of failing to identify a true program effect. Instead, we rely on results for related outcome measures to assess whether an estimated difference is probably evidence of a true program effect rather than a chance difference. Furthermore, because total Medicare expenditures is the most important measure, and encompasses effects on all services and expenditures by type of services, we treat that as the primary outcome for which we use a 0.10 significance level. Other outcomes are secondary, and more exploratory, so we rely on a combination of the significance level and patterns of findings across related measures.

7.2.1. Outcomes

We estimated impacts for the following claims-based outcomes:

- Medicare Part A and Part B monthly expenditures (both with and without CPC care management fees). Although the primary outcome of interest is net expenditures (with fees), we also examine expenditures without fees. This approach allows us to gather rigorous evidence about whether CPC is cost neutral. Because CPC care management fees are a relatively small portion of Medicare expenditures, we might find that net Medicare expenditures are not significantly different from zero (due to limited statistical power) even if we have no clear evidence that CPC reduces expenditures for service use. Therefore, we first examine whether CPC affected gross Medicare expenditures for service use and the size of those effects and only then examine whether any savings observed were large enough to cover program fees by examining program effects on net Medicare expenditures including the CPC care management fees. If impact estimates suggest that CPC reduces gross Medicare expenditures and net Medicare expenditures are not significantly different from zero, then we have evidence that is consistent with (though not proof of) cost neutrality. If we cannot reject the hypothesis of no effects on gross Medicare expenditures, then it is unlikely that CPC is cost neutral, even if we cannot reject the hypothesis that net effects were zero.
- Medicare Part A and Part B monthly expenditures by type of service (inpatient, physician, outpatient, skilled nursing facility, durable medical equipment [DME], hospice, and home health).
- Rates per 1,000 beneficiaries of annual Medicare service use (hospitalizations, outpatient ED visits, total ED visits, primary care physician visits, and specialist visits).
- Twelve claims-based quality-of-care *process* measures measured over the year:[55]
  - For beneficiaries with diabetes at the time of enrollment: the likelihood of receiving an HbA1c test, a lipid test, an eye exam, a urine protein test, all four exams or tests, and none of the four exams or tests
  - For beneficiaries with treatment for ischemic vascular disease during the year before enrollment: the likelihood of receiving a lipid test
  - For all beneficiaries: continuity of care (the percentage of primary care office visits with the attributed practice and the percentage of all office visits, the latter including primary care as well as specialist visits) with the attributed practice and the Bice-Boxerman index (BBI) for primary care visits and the Bice-Boxerman index for all office visits, including

[55] These claims-based quality-of-care measures span all care received by Medicare beneficiaries; the clinical quality measures (CQMs) that practices report based on their EHRs only include care received by beneficiaries from the practice. The four measures for patients with diabetes and the measure for patients with IVD are based on Healthcare Effectiveness Data and Information Set (HEDIS) specifications.

both primary care and specialist visits)[56] and transitional care (receipt of a follow-up visit by any clinician from this or another practice within 14 days of a hospital discharge).

- Three claims-based quality-of-care *outcome* measures: (1) the likelihood of an unplanned hospital readmission during the 30 days after hospital discharge, (2) the rate of hospitalizations for ambulatory care sensitive conditions (ACSCs) per 1,000 beneficiaries per year, and (3) the likelihood of an ED revisit within 30 days of an outpatient ED visit.

7.2.2. Difference-in-differences estimation strategy

We estimated the impact of CPC by using difference-in-differences regressions. These regressions compare mean outcomes (per beneficiary per month for Medicare expenditures, rates per 1,000 beneficiaries for service use outcomes, and percentage of beneficiaries receiving appropriate care for quality outcomes) between the CPC and comparison groups during the four quarters before CPC and the eight quarters after CPC began, while controlling for patient, practice, and market characteristics. These models net out any remaining observable preexisting differences in outcomes between the CPC and comparison beneficiaries at baseline that were not accounted for by propensity-score matching. Our estimated standard errors account for clustering of patient outcomes at the practice level and for weighting. The observation weights are equal to the product of two separate weights: one reflecting the share of the year for which the beneficiary's data are observed, and one ensuring that the weights for patients in the comparison practices matched to a given CPC practice sum to the same total as the sum of weights for the patients in that CPC practice.

For Medicare expenditures with and without care management fees and for the continuity of care measures, we estimate a linear regression (the measures and regressions are described in Appendix H). For the service utilization outcomes (hospitalizations, ED visits, ACSC admissions, physician visits), which are measured as utilization counts per 1,000 beneficiaries per year, we use maximum likelihood models appropriate for count variables. Specifically, to account for overdispersion in utilization counts, we use negative binomial models for service utilization outcomes such as physician visits, and, to account for overdispersion and the large percentage of zeroes (beneficiaries with no utilization during a quarter), we use a zero-inflated negative binomial model for service utilization outcomes that have a large percentage of zeroes, such as hospitalizations and ED visits.[57] For modeling the likelihood of an unplanned readmission within 30 days following a discharge, the likelihood of a follow-up visit within 14 days of a discharge, and the likelihood of an ED revisit within 30 days of an outpatient ED visit,

[56] The BBI is a measure of how concentrated (or dispersed) a patient's visits are across all providers (where the CPC practice or comparison practice is treated as a single provider) that the patient saw over a time period. For example, if a patient had 10 visits, all to the same provider, the BBI would be 1 (perfect continuity), and if the patient made one visit to each of 10 providers, the BBI would be zero.

[57] The zero-inflated negative binomial model relies on the assumption that the excessive zeroes are generated by a separate process from the count values and that the excessive zeroes can be independently modeled using a binary outcome model, such as a logit model.

we use separate logistic regressions.[58] We also use logistic regressions for the binary quality-of-care measures for patients with diabetes and ischemic heart disease included in the annual analysis.

Our regressions control for the same practice characteristics (National Committee for Quality Assurance [NCQA]-recognized or state-recognized medical home, number of clinicians, whether the practice is multi-specialty, whether the practice is owned by a larger organization, and the presence of a Medicare-defined meaningful user of EHR) and market characteristics (such as household income of the practice's zip code, Medicare Advantage penetration rate, percent of the county that is urban, and whether the practice was located in a medically underserved area) used in the propensity score matching. Additionally, they control for beneficiary level-characteristics measured in the preintervention period, including demographics (age categories, race categories, gender); variables capturing Medicare and Medicaid eligibility (original reason for Medicare eligibility, dual status); and HCC score. In addition, in the readmission and follow-up visit equations, we include discharge-level controls to account for risk factors associated with a discharge, which may vary from one discharge to another for the same person. These control variables are sourced from the risk-adjustment methodology for CMS's Hospital-wide All-condition Unplanned Readmission measure and are significant predictors of the risk of readmission and follow-up visits in our analysis. Specifically, we control for the following discharge-level factors: indicators for 31 condition categories (with one serving as the reference category) identified in inpatient episodes of care during the 12 months before the index admission, as well as those present at admission. To avoid introducing endogeneity issues, we do not control for diagnoses that may have occurred as a complication of care during the index admission. We also control for indicators for the specialty cohort to which the principal diagnosis or procedure associated with the index discharge belonged (the six cohorts for which we include indicator variables in the model, with one serving as the reference category, are (1) medicine, (2) surgery, (3) cardiorespiratory, (4) cardiovascular, (5) neurology, and (6) other. For the ED revisit model, which is estimated at the beneficiary level, we also control for 24 baseline chronic condition indicators defined by applying the claims-based Chronic Conditions Warehouse algorithm on Medicare claims.

Results are presented both for the full sample of all attributed Medicare FFS beneficiaries and for a subgroup including the high-risk beneficiaries, for whom we expect CPC to have larger effects on costs and service utilization because of their greater need for expensive services. This subgroup includes the beneficiaries with the highest quartile of 2012 HCC scores.

7.2.3. Statistical power to detect effects

The number of practices and patients provides reasonable confidence that the analysis will detect modest impacts of CPC on Medicare service use and costs for all beneficiaries and for

[58] The equations for readmissions and follow-up visits are estimated on all discharges for beneficiaries with eligible index discharges, with both beneficiary- and discharge-level control variables included in those equations. The likelihood of an ED revisit is modeled for all beneficiaries and is estimated as a beneficiary-level outcome. To eliminate potential biases due to CPC effects on admissions, we separately estimated a beneficiary-level equation for whether the beneficiary had an admission with a subsequent readmission within 30 days of discharge that included all attributed beneficiaries. The beneficiary-level readmission rates were quite low (about 3 per 100 beneficiaries), and almost none of the results were statistically significant in that model.

high-risk beneficiaries, both for the initiative as a whole and by region. For quarterly impact estimates using two-tailed tests at the 5 percent significance level, our estimated standard errors from the regression models imply that the evaluation has 80 percent power to detect impacts on Medicare FFS expenditures that are at least 3.8 percent of the comparison group mean for the full sample of all attributed Medicare FFS beneficiaries CPC-wide. At the region level, we can detect only those impacts that are at least 6 to 10 percent of the comparison group mean, depending on the region. Annual impact estimates have somewhat smaller (better) minimum detectable effects (MDEs); for example, the evaluation has 80 percent power to detect impacts on expenditures of 2 percent CPC-wide and 4 to 8 percent for any region. The smaller MDEs for the annual estimates are due to the smoothing out (that is, lower variance) of expenditures and service utilization that occurs when measured over a longer time span.

Although the MDEs are higher for the high-risk subgroup (for example, MDEs are 3.4 percent for the high-risk group, compared to 2 percent for all beneficiaries), it may be easier to detect effects among this subgroup than among all beneficiaries. If program effects on costs, service use, and quality are concentrated largely or solely among the high-risk subgroup of beneficiaries, as often occurs because there is less opportunity to reduce the need for expensive services through improved care for healthier patients, the larger impact among the high-risk subgroup often makes it more detectable, despite the smaller sample size, than the impact for the full sample of all beneficiaries.

We calculated effects for the entire first program year, for the entire second program year, and cumulatively, found by averaging the first two years combined.[59] We report the size of the impacts (for example, in dollars for expenditures) and the percentage impacts. To calculate the percentage impacts, we divide the impact estimate by what the CPC group mean is projected to have been in the absence of CPC (that is, the unadjusted CPC group mean minus the CPC impact estimate).

7.3. CPC-wide results

7.3.1. Medicare expenditures

CPC reduced Medicare FFS expenditures*, not including CPC care management fees,* by 1 percent during the first two years (see Tables 7.1A and 7.1B for a summary of percentage impacts on Medicare expenditures and service use for all beneficiaries and high-risk beneficiaries). We did not expect to find effects of CPC in the first two years. However, when all seven regions are combined, CPC appears to have reduced total monthly Medicare expenditures without care management fees by a statistically significant $11 per beneficiary per month (p = 0.07, 90 percent confidence interval indicates savings of between $1 and $21) (Table 7.2). The change in Medicare expenditures without fees was more favorable for CPC beneficiaries than for the comparison group beneficiaries in four regions—New Jersey, New York, Oklahoma, and Oregon (although only the New Jersey and Oklahoma estimates were statistically significant, as shown in Table 7.1A)—as described in greater detail in the discussion of region-specific results in Appendix F (Tables F.1 through F.14). We present region-specific results because tests reject the hypothesis that impacts over the two years were equal across the seven regions.

[59] We also looked at results by quarter, but the quarterly estimates were more variable. Contrary to expectations, they did not reveal a larger improvement in the latter quarters than earlier ones (see Figure 7.2).

Examining each of the first two program years separately, CPC reduced expenditures by $15 per beneficiary per month or 2 percent ($p = 0.03$), in year 1—mainly through reductions in inpatient expenditures. The estimate for year 2 ($-8 PBPM, or 1 percent; $p = 0.30$) was not statistically significant (Table 7.7), but the year 1 and year 2 estimates are not significantly different from each other. That is, the confidence interval around the year 2 estimate encompasses both 0 and the year 1 impact estimate (-$15). Given that we cannot reject the hypothesis that year 1 and year 2 effects are equivalent, we can pool the data from the two years. When the two years are combined, the estimated effect is a statistically significant savings of $11 PBPM.

Declines in gross expenditures were driven primarily by reductions in hospital and skilled nursing facility expenditures. More than 60 percent of the decline in total monthly Medicare expenditures in the first two years combined was due to a reduction in inpatient expenditures ($11), and the rest was mainly due to a reduction in expenditures on skilled nursing facilities ($4) (Table 7.5); both results were statistically significant. The effects on outpatient hospital services, physician services, DME, home health, or hospice services were all close to zero and not statistically significant.

Table 7.5. Breakdown of savings in total Medicare FFS expenditures per beneficiary per month, by service category

	Year 1 impact estimate	Year 2 impact estimate	Combined year 1 and year 2 impact estimate
Total Medicare expenditures	-$15**	-$8	-$11*
Inpatient	-$11**	-$3	-$7*
Skilled nursing facility	-$4**	-$4**	-$4**
Outpatient	-$1	-$2	-$2
Physician	$1	$0	$0
Home health	-$1	$2**	$1
Hospice	$1	$1	$1
Durable medical equipment	$0	-$1	$0

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service.

Table 7.6. Regression-adjusted means and estimated difference-in-differences impact of CPC on Medicare FFS expenditures, hospitalizations, and outpatient ED visits over the first two years of CPC: Cumulative estimates, by region

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
Total Medicare expenditures ($ per beneficiary per month)												
Arkansas												
Without CPC care management fees												
Baseline	$614	$636	—	—	—	—	$1,432	$1,434	—	—	—	—
Postintervention	$755	$774	$3	$13	0%	0.806	$1,436	$1,453	-$16	$40	-1%	0.691
With CPC care management fees												
Baseline	$614	$636	—	—	—	—	$1,433	$1,434	—	—	—	—
Postintervention	$772	$774	$21	$13	3%	0.104	$1,462	$1,453	$10	$40	1%	0.802
Hospitalizations												
Baseline	287	275	—	—	—	—	704	667	—	—	—	—
Postintervention	335	321	3	8	1%	0.673	687	653	-3	20	0%	0.866
Outpatient ED visits												
Baseline	495	484	—	—	—	—	973	913	—	—	—	—
Postintervention	539	528	-1	13	0%	0.96	934	896	-21	32	-2%	0.509
Number of Observations	697,867						182,278					
Colorado												
Without CPC care management fees												
Baseline	$581	$599	—	—	—	—	$1,407	$1,448	—	—	—	—
Postintervention	$708	$730	-$3	$19	0%	0.859	$1,375	$1,418	-$3	$71	0%	0.97
With CPC care management fees												
Baseline	$580	$599	—	—	—	—	$1,407	$1,448	—	—	—	—
Postintervention	$726	$730	$15	$19	2%	0.438	$1,407	$1,418	$29	$71	2%	0.682
Hospitalizations												
Baseline	208	236	—	—	—	—	539	598	—	—	—	—
Postintervention	244	270	2	11	1%	0.834	518	562	16	28	3%	0.581

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
Outpatient ED visits												
Baseline	389	405	—	—	—	—	793	809	—	—	—	—
Postintervention	443	465	-6	13	-1%	0.642	816	825	8	25	1%	0.758
Number of Observations	535,173						120,914					
New Jersey												
Without CPC care management fees												
Baseline	$711	$719	—	—	—	—	$1,528	$1,548	—	—	—	—
Postintervention	$903	$950	-$39***	$14	-4%	0.005	$1,649	$1,731	-$62*	$35	-4%	0.077
With CPC care management fees												
Baseline	$711	$719	—	—	—	—	$1,529	$1,548	—	—	—	—
Postintervention	$921	$950	-$21	$14	-2%	0.133	$1,679	$1,731	-$32	$35	-2%	0.356
Hospitalizations												
Baseline	231	234	—	—	—	—	542	544	—	—	—	—
Postintervention	289	306	-13	8	-4%	0.105	582	602	-17	17	-3%	0.303
Outpatient ED visits												
Baseline	316	323	—	—	—	—	568	573	—	—	—	—
Postintervention	340	342	4	7	1%	0.523	569	544	30	19	6%	0.105
Number of Observations	419,183						112,757					
New York												
Without CPC care management fees												
Baseline	$638	$639	—	—	—	—	$1,369	$1,351	—	—	—	—
Postintervention	$810	$831	-$21	$18	-2%	0.263	$1,474	$1,510	-$55	$46	-4%	0.233
With CPC care management fees												
Baseline	$638	$638	—	—	—	—	$1,370	$1,351	—	—	—	—
Postintervention	$829	$831	-$2	$18	0%	0.915	$1,502	$1,510	-$27	$46	-2%	0.567
Hospitalizations												
Baseline	254	234	—	—	—	—	589	543	—	—	—	—
Postintervention	305	306	-21***	7	-6%	0.002	608	616	-54***	18	-8%	0.003
Outpatient ED visits												
Baseline	390	387	—	—	—	—	704	696	—	—	—	—
Postintervention	439	418	18	11	4%	0.114	743	682	54*	29	8%	0.067
Number of Observations	346,248						94,667					

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
Ohio/Kentucky												
Without CPC care management fees												
Baseline	$637	$674	—	—	—	—	$1,419	$1,444	—	—	—	—
Postintervention	$838	$841	$35*	$19	4%	0.073	$1,589	$1,513	$102***	$34	7%	0.003
With CPC care management fees												
Baseline	$637	$674	—	—	—	—	$1,419	$1,444	—	—	—	—
Postintervention	$857	$841	$53***	$19	7%	0.006	$1,619	$1,513	$131***	$34	9%	<.001
Hospitalizations												
Baseline	286	308	—	—	—	—	674	694	—	—	—	—
Postintervention	344	351	14	12	4%	0.214	693	680	32	22	5%	0.134
Outpatient ED visits												
Baseline	475	479	—	—	—	—	869	827	—	—	—	—
Postintervention	523	528	-1	12	0%	0.932	873	860	-30	27	-3%	0.275
Number of Observations	456,818						123,495					
Oklahoma												
Without CPC care management fees												
Baseline	$636	$636	—	—	—	—	$1479	$1478	—	—	—	—
Postintervention	$779	$807	-$27**	$12	-3%	0.026	$1,481	$1,568	-$88**	$37	-6%	0.02
With CPC care management fees												
Baseline	$636	$636	—	—	—	—	$1,479	$1,478	—	—	—	—
Postintervention	$797	$807	-$10	$12	-1%	0.425	$1,508	$1,568	-$61	$37	-4%	0.105
Hospitalizations												
Baseline	289	279	—	—	—	—	696	678	—	—	—	—
Postintervention	333	329	-6	6	-2%	0.33	670	673	-20	22	-3%	0.36
Outpatient ED visits												
Baseline	480	532	—	—	—	—	915	1,033	—	—	—	—
Postintervention	532	602	-18*	11	-3%	0.088	901	1,090	-72***	26	-8%	0.005
Number of Observations	523,343						133,814					
Oregon												
Without CPC care management fees												
Baseline	$594	$584	—	—	—	—	$1,317	$1,311	—	—	—	—
Postintervention	$722	$731	-$19	$12	-3%	0.111	$1,348	$1,329	$13	$41	1%	0.759

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
With CPC care management fees												
Baseline	$594	$584	—	—	—	—	$1,318	$1,312	—	—	—	—
Postintervention	$740	$731	-$1	$12	0%	0.959	$1,377	$1,329	$41	$41	3%	0.317
Hospitalizations												
Baseline	223	213	—	—	—	—	529	511	—	—	—	—
Postintervention	254	256	-12	7	-4%	0.105	518	505	-5	22	-1%	0.814
Outpatient ED Visits												
Baseline	476	466	—	—	—	—	946	931	—	—	—	—
Postintervention	511	526	-24*	13	-5%	0.06	930	918	-2	35	0%	0.946
Number of Observations	599,998						149,095					

Source: Medicare claims data for the period October 2011–September 2014.

Note: Impact estimates and predicted means are regression adjusted for baseline patient characteristics (including HCC scores) and baseline practice characteristics. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for beneficiaries in CPC practices in year 1 and year 2 combined together, compared to baseline, relative to the same difference over time for beneficiaries in matched comparison practices. Number of observations includes the total number of treatment and comparison group observations across all years.

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service; ED = emergency department.

Table 7.7. Regression-adjusted means and estimated difference-in-differences impact of CPC on expenditure and utilization measures during the first two years of CPC for attributed Medicare FFS beneficiaries: Yearly estimates CPC-wide

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
Total Medicare expenditures ($ per beneficiary per month)												
Without CPC care management fees												
Baseline	$613	$616	—	—	—	—	$1,417	$1,406	—	—	—	—
Year 1	$741	$759	-$15**	$7	-2%	0.029	$1,445	$1,471	-$37*	$22	-2%	0.088
Year 2	$794	$804	-$8	$7	-1%	0.297	$1,501	$1,488	$2	$19	0%	0.932
Test whether year 1 and year 2 impacts are jointly significant	F = 2.415	*p*-val = 0.09					F = 2.152	*p*-val = 0.117				
With CPC care management fees												
Baseline	$613	$616	—	—	—	—	$1,417	$1,406	—	—	—	—
Year 1	$760	$759	$4	$7	0%	0.571	$1,473	$1,471	-$8	$22	-1%	0.695
Year 2	$811	$804	$10	$7	1%	0.177	$1,529	$1,488	$30	$19	2%	0.112
Test whether year 1 and year 2 impacts are jointly significant	F = 0.937	*p*-val = 0.392					F = 2.34	*p*-val = 0.097				
Expenditures by type of service ($ per beneficiary per month)												
Inpatient												
Baseline	$214	$208	—	—	—	—	$548	$525	—	—	—	—
Year 1	$274	$278	-$11**	$4	-4%	0.013	$564	$575	-$35***	$13	-6%	0.007
Year 2	$290	$286	-$3	$5	-1%	0.49	$578	$556	-$1	$12	0%	0.921
Physician												
Baseline	$208	$203	—	—	—	—	$381	$367	—	—	—	—
Year 1	$222	$217	$1	$2	0%	0.631	$360	$346	$0	$4	0%	0.924
Year 2	$231	$227	$0	$2	0%	0.91	$363	$348	$0	$5	0%	0.967
Outpatient												
Baseline	$103	$109	—	—	—	—	$204	$212	—	—	—	—
Year 1	$114	$120	-$1	$1	-1%	0.389	$195	$202	$1	$4	1%	0.722
Year 2	$127	$135	-$2	$2	-2%	0.231	$213	$217	$4	$4	2%	0.308
Skilled nursing facility												
Baseline	$32	$34	—	—	—	—	$107	$112	—	—	—	—
Year 1	$55	$61	-$4**	$2	-6%	0.028	$138	$148	-$7	$6	-4%	0.256
Year 2	$63	$69	-$4**	$2	-6%	0.039	$149	$164	-$10**	$5	-6%	0.048

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
DME												
Baseline	$25	$25	—	—	—	—	$67	$68	—	—	—	—
Year 1	$24	$24	$0	$0	1%	0.693	$54	$53	$1	$1	2%	0.185
Year 2	$21	$22	-$1	$1	-2%	0.311	$45	$46	$0	$1	1%	0.865
Hospice												
Baseline	$2	$3	—	—	—	—	$13	$17	—	—	—	—
Year 1	$17	$18	$1	$1	3%	0.558	$46	$47	$3	$3	6%	0.282
Year 2	$23	$24	$1	$1	3%	0.588	$58	$59	$3	$3	6%	0.329
Home health												
Baseline	$29	$34	—	—	—	—	$95	$105	—	—	—	—
Year 1	$35	$40	-$1	$1	-2%	0.298	$89	$99	-$1	$2	-1%	0.786
Year 2	$39	$42	$2**	$1	5%	0.014	$94	$99	$5**	$2	6%	0.01
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	249	250	—	—	—	—	610	604	—	—	—	—
Year 1	294	301	-6	4	-2%	0.106	618	628	-15	10	-2%	0.136
Year 2	295	300	-5	4	-2%	0.238	601	598	-2	10	0%	0.875
Outpatient ED visits												
Baseline	432	445	—	—	—	—	831	843	—	—	—	—
Year 1	460	475	-3	5	-1%	0.476	809	825	-4	12	-1%	0.727
Year 2	490	507	-4	5	-1%	0.454	851	864	-1	13	0%	0.963
Total ED visits												
Baseline	589	602	—	—	—	—	1,257	1,268	—	—	—	—
Year 1	659	682	-9	6	-1%	0.119	1,271	1,299	-17	17	-1%	0.314
Year 2	695	715	-7	6	-1%	0.271	1,310	1,321	1	17	0%	0.962
Observation stays												
Baseline	45	46	—	—	—	—	96	98	—	—	—	—
Year 1	51	51	1	1	2%	0.376	100	99	4	4	4%	0.345
Year 2	62	59	4**	2	8%	0.015	116	110	9*	5	9%	0.077
Primary care visits												
Baseline	6,814	7,089	—	—	—	—	11,065	11,324	—	—	—	—
Year 1	7,917	8,371	-180***	66	-2%	0.006	11,806	12,384	-319**	128	-3%	0.013
Year 2	7,769	8,316	-273***	81	-3%	0.001	11,699	12,236	-278*	163	-2%	0.089

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact
Specialist visits												
Baseline	12,261	12,313	—	—	—	—	21,931	21,641	—	—	—	—
Year 1	12,810	12,878	-17	75	0%	0.817	20,553	20,377	-114	174	-1%	0.513
Year 2	13,236	13,281	6	85	0%	0.94	20,388	20,184	-86	171	0%	0.616
Number of Observations	3,578,630						917,020					

Source: Medicare claims data for the period October 2011–September 2014.

Note: Impact estimates and predicted means are regression adjusted for baseline patient characteristics (including HCC scores) and baseline practice characteristics. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for beneficiaries in CPC practices in year 1 or year 2 compared to baseline relative to the same difference over time for beneficiaries in matched comparison practices.

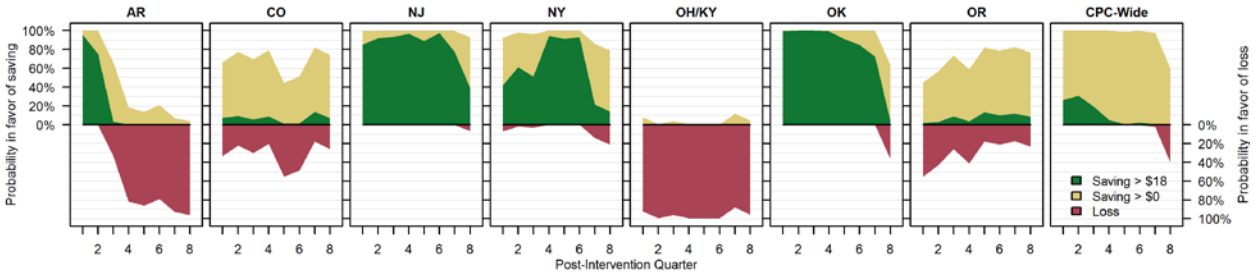
*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service; ACSC = ambulatory care sensitive condition; DME = durable medical equipment; ED = emergency department.

CPC did not generate net savings during the first two years and was unlikely to have been cost neutral. The $11 reduction in expenditures without fees per month over the first 24 months offset more than half of CPC's care management fees, which averaged $18 per attributed beneficiary per month (less than the average of $20 CMS paid for attributed beneficiaries because our intent-to-treat sample follows beneficiaries even after they are no longer attributed to a CPC practice) (Table 7.2). Although CPC did not generate savings, either overall or for high-risk patients, the 90 percent confidence interval was -$3 to +$17, which includes zero, meaning there was no statistically significant difference between the change over time in total costs, including fees for patients of CPC practices and patients of comparison practices.

Using a Bayesian model, we find similar estimates of program effects, and are able to conclude from that model that, although there is a 98.6 percent probability that CPC generated some reduction in Medicare expenditures excluding the CPC fees, the likelihood that the savings exceed the $18 needed for cost neutrality or net savings is approximately 4 percent across all CPC regions in the initiative's first 24 months. Figure 7.1 shows, by quarter and region, the probabilities that CPC has achieved net savings (green), net losses (red), or some reduction in expenditures but less than the amount needed by quarter to reach cost neutrality. The probabilities of net savings for CPC's first 24 months are computed as the average across the eight quarters. The Bayesian results, consistent with our difference-in-differences estimates, show a much higher probability of net savings during year 1. As the information accumulated during year 2 that these early findings were not sustained, the probability that CPC generated savings declined, dramatically for some regions. This suggests that the early results overstated true program effects. The sum total of the evidence over the first two years supports the conclusion of modest reductions in Medicare expenditures for usual services CPC-wide, but not enough to cover the care management fees. As was true for the estimates shown earlier, the regions with the largest cost increases are Arkansas and Ohio/Kentucky, and the regions with the largest savings are New Jersey and Oklahoma, which both showed a high probability of net savings in each quarter until the eighth quarter (third quarter of 2014).

Figure 7.1. Probability that CPC achieved net savings



None of the regions achieved statistically significant net savings over the first two years of CPC (Table 7.6). Our estimates suggest that Oklahoma did achieve net savings in year 1—with savings estimates of $33 and $119 net, including care management fees (4 and 7 percent), for all patients and among high-risk patients, respectively (Tables 7.1A and 7.1B and F.11 and F.12). However, these savings estimates disappear entirely in year 2 (net savings of 0), suggesting that the results for year 1 may be a statistical anomaly, rather than true effects that disappeared in year 2. In addition, New Jersey and Oklahoma had statistically significant

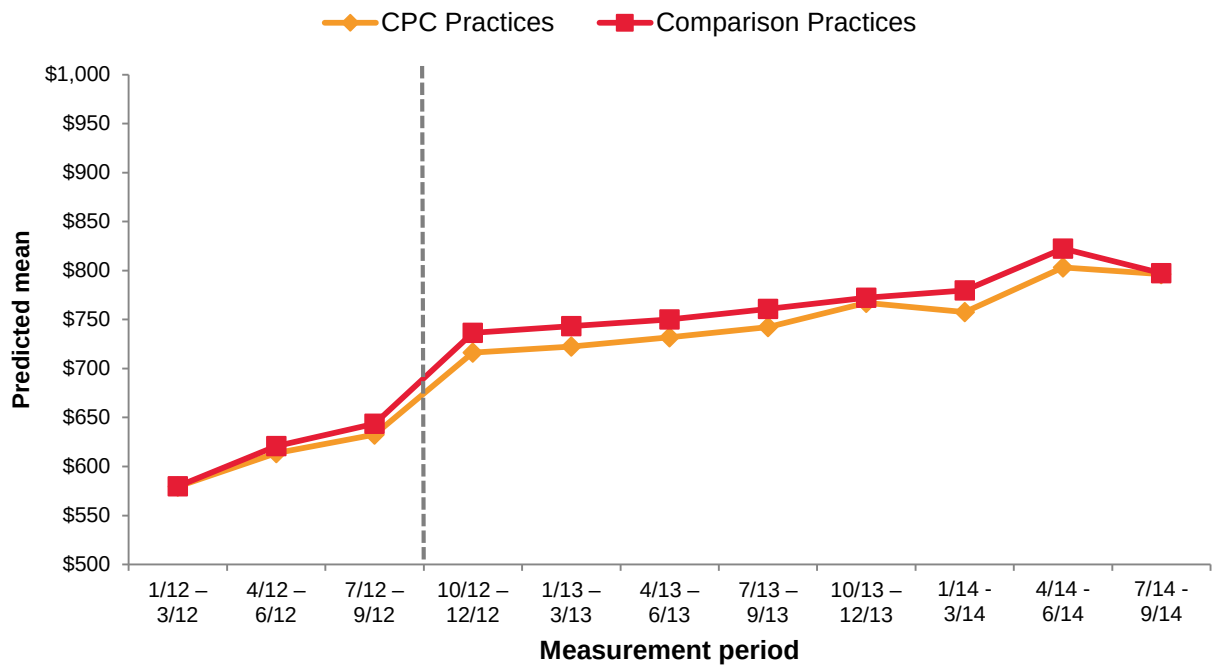
reductions in Medicare expenditures per beneficiary per month for services without fees of $39 (4 percent) and $27 (3 percent) for the first two years combined, enough to fully offset care management fees; thus, the cumulative estimate for Medicare expenditures with fees per beneficiary per month implied reductions of $21 and $10 (neither statistically significant) in these two regions, respectively. In Ohio/Kentucky, however, there were unfavorable statistically significant increases in net Medicare expenditures in the first two years combined. These cumulative per beneficiary per month increases were $53 (7 percent) among all patients and $131 (9 percent) among high-risk patients.

Results for expenditures are not sensitive to various alterations to the model and sample. We implemented four categories of sensitivity tests to check that the estimated impacts on Medicare expenditures without fees from the main difference-in-differences model were robust to changing the estimation strategy or the model specification and to rule out alternative explanations for the findings. The tests focused on different aspects of the analysis: (1) tests of the assumptions underlying the difference-in-differences estimation approach, (2) tests of the composition of the patient sample, (3) tests of the definition of the comparison group, and (4) tests of the robustness of the findings to changing the model specification (see Appendix I for a full discussion of these tests). Varying our difference-in-differences approach, definition of the sample (by following only those beneficiaries attributed in quarter 1 rather than including beneficiaries attributed in later quarters), and model specification, including using practice fixed effects, models with a GLM log link, and models with trimmed expenditures, produced results similar to our main model, with two exceptions. First, when we used the log of actual Medicare expenditures as the dependent variable, which reduces the effect of high-cost cases, the year 1 CPC-wide estimate was close to zero and not statistically significant. Because CPC practices prioritize delivering care management to costly patients, we expect this test to understate the true effects of CPC. Second, when we compared CPC practices to comparison practices in external regions only, the estimated effect on Medicare expenditures without fees was positive (implying cost increases) but not statistically significant. Comparing CPC practices to other practices within their regions that applied to participate but were not selected yielded somewhat larger, favorable estimated effects. This suggests that internal comparison practices did not benefit from spillover effects due to CPC's presence in their region. (See Appendix I for details.)

Finally, a Bayesian analysis, in which we allow the estimated effects in a given region to depend in part on the CPC-wide effects, showed overall estimates for Medicare expenditures very similar to our main estimates. The Bayesian estimates for individual regions showed less variability across regions and time periods, by design, but did not substantively change our conclusions about the regions with the most or least promising findings to date.

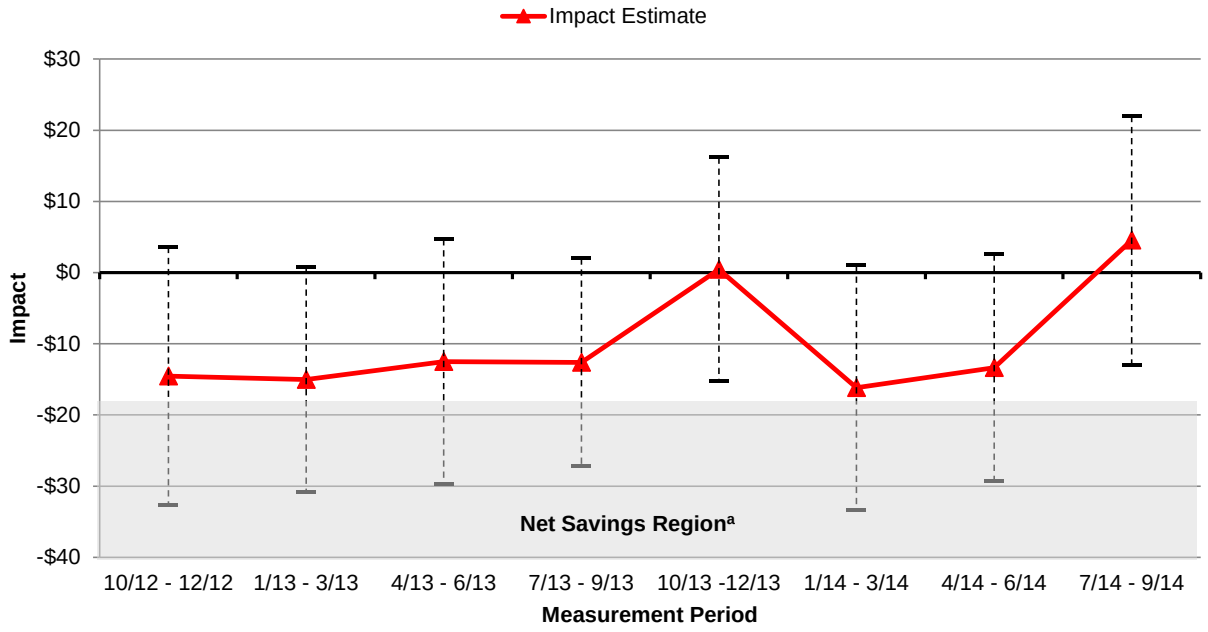
The trend differs somewhat from what had been expected from the literature and our hypotheses about the time needed for practices to transform. Rather than little or no effects during year 1, followed by a small but meaningful effect in year 2, as the program matured, we see slightly (but not significantly) larger estimated effects in year 1 than in year 2 (see Figures 7.2 and 7.3). Given that the annual estimates for year 1 and year 2 do not differ significantly from each other, however, our overall conclusion relies less on the time path of the point estimates and more on the pooled estimate of savings in Medicare expenditures without fees of $11 per beneficiary per month across the two years.

Figure 7.2. Predicted mean Medicare Part A and Part B expenditures per beneficiary per month, excluding CPC care management fees, all beneficiaries, CPC-wide



Notes: The vertical dashed line indicates the start of the CPC initiative. Predicted means are regression adjusted to control for pre-CPC patient characteristics (including HCC scores) and practice characteristics.

Figure 7.3. Estimated CPC impact on Medicare Part A and Part B expenditures per beneficiary per month, excluding CPC care management fees, all beneficiaries, CPC-wide



Notes: The estimated impact, denoted by a separate triangle for each CPC quarter in the figure, is equal to the difference in mean outcomes between patients in CPC and comparison group practices in any CPC quarter minus the average difference between the two groups over the four pre-CPC quarters. The impacts are regression adjusted to control for pre-CPC differences in patient and practice characteristics between the CPC and comparison groups. The 90 percent confidence interval is shown by the dashed vertical line through each impact estimate.

[a] Impact estimates that fall in the shaded net savings region imply that there are savings after including the CPC care management fees—that is, that estimated savings in expenditures without CPC care management fees exceed the CPC care management fees.

Effects for the highest-risk beneficiaries were larger in magnitude than effects for all beneficiaries, but of a similar percentage. Because there are usually more opportunities to improve care and reduce costs for high-risk patients, we checked whether impacts varied for *patients* who were in the top risk quartile when they were first attributed. Effect sizes were generally larger in magnitude among high-risk patients than for all patients, but the percentage impact on total Medicare expenditures was similar between high-risk and all patients (Tables 7.1A, 7.1B, and 7.7). For the high-risk patients, the cumulative decline during the first two years in average monthly Medicare expenditures per beneficiary per month without care management fees relative to the comparison group was larger in magnitude and about the same percentage impact as among all patients, although not statistically significant: $18 (or 1 percent) (Table 7.2). Specifically, in year 1, the decline in expenditures for high-risk patients was $37, or 2 percent (more than 90 percent of which was due to a statistically significant decline in inpatient expenditures), but the impact estimate was close to zero in the second program year (Table 7.7).

Table 7.8. Regression-adjusted means and estimated difference-in-differences impact of CPC on selected quality-of-care process and outcome measures during the first two years of CPC: Yearly estimates for attributed Medicare FFS beneficiaries CPC-wide

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated Impact (%)	*p*-value for estimated impact
Quality of care (percentage)												
Among patients with diabetes—HbA1c test												
Baseline	76.5	78.8	—	—	—	—	73.5	75.3	—	—	—	—
Year 1	77.3	79.0	0.6	0.8	1%	0.454	75.3	76.4	0.7	1.1	1%	0.5
Year 2	78.2	80.3	0.2	0.9	0%	0.866	76.3	78.7	-0.7	1.2	-1%	0.576
Among patients with diabetes—lipid test												
Baseline	83.6	83.8	—	—	—	—	80.4	80.5	—	—	—	—
Year 1	84.1	84.1	0.3	0.5	0%	0.547	81.7	81.4	0.5	0.7	1%	0.511
Year 2	84.0	83.7	0.6	0.7	1%	0.4	81.3	81.0	0.4	0.9	0%	0.679
Among patients with diabetes—eye exam												
Baseline	54.6	54.9	—	—	—	—	54.3	54.9	—	—	—	—
Year 1	56.7	55.9	1.0	0.7	2%	0.159	57.1	55.6	2.1**	1.0	4%	0.045
Year 2	56.7	56.0	1.0	0.6	2%	0.111	56.6	55.6	1.6	1.0	3%	0.123
Among patients with diabetes—urine protein test												
Baseline	58.5	59.9	—	—	—	—	62.6	64.6	—	—	—	—
Year 1	61.7	62.5	0.7	0.8	1%	0.43	65.4	65.1	2.3**	1.0	4%	0.023
Year 2	64.1	63.9	1.6	1.0	3%	0.121	67.4	66.6	2.8**	1.1	4%	0.011
Among patients with Ischemic vascular disease—lipid test												
Baseline	80.6	81.2	—	—	—	—	77.1	77.7	—	—	—	—
Year 1	79.7	79.6	0.7	0.8	1%	0.385	76.9	76.0	1.5	1.1	2%	0.191
Year 2	77.8	78.2	0.3	0.8	0%	0.753	74.9	75.0	0.5	1.1	1%	0.659
Among patients with diabetes—all 4 tests performed												
Baseline	29.8	31.5	—	—	—	—	29.8	32.3	—	—	—	—
Year 1	32.6	33.1	1.2	0.8	4%	0.139	33.6	32.8	3.2***	1.0	10%	0.001
Year 2	33.3	33.9	1.2	0.9	4%	0.175	33.4	33.1	2.8**	1.1	9%	0.014

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Com-parison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated Impact (%)	*p*-value for estimated impact
Among patients with diabetes—none of the 4 tests performed												
Baseline	6.1	5.6	—	—	—	—	6.2	5.8	—	—	—	—
Year 1	5.4	5.2	-0.2	0.3	-3%	0.56	5.2	5.2	-0.4	0.5	-7%	0.436
Year 2	5.0	5.2	-0.6**	0.3	-11%	0.027	4.9	5.1	-0.6	0.4	-11%	0.124
Number of Observations: Patients with diabetes	398,415						141,778					
Number of Observations: Patients with Ischemic vascular disease	405,346						203,116					
Continuity of care (percentage)												
Percentage of PCP visits at attributed practice												
Preintervention	84.0	81.6	—	—	—	—	80.9	77.8	—	—	—	—
Postintervention	72.2	70.0	-0.2	0.7	0%	0.799	69.8	66.9	-0.2	0.8	0%	0.81
Percentage of all visits at attributed practice												
Preintervention	47.1	47.7	—	—	—	—	40.6	41.0	—	—	—	—
Postintervention	39.2	39.7	0.2	0.5	1%	0.646	35.4	35.7	0.1	0.5	0%	0.881
Bice-Boxerman Index based on PCP visits												
Preintervention	76.4	73.6	—	—	—	—	73.2	70.0	—	—	—	—
Postintervention	70.8	67.9	0.1	0.6	0%	0.884	69.0	65.8	0.0	0.7	0%	0.954
Bice-Boxerman Index based on all visits												
Preintervention	35.0	35.0	—	—	—	—	29.6	29.6	—	—	—	—
Postintervention	32.9	32.7	0.1	0.3	0%	0.684	29.8	29.8	0.0	0.3	0%	0.892
Number of Observations: Measures based on PCP visits	1,277,724						389,590					
Number of Observations: Measures based on all visits	1,587,066						460,780					

	All Attributed Medicare Beneficiaries						High-Risk Attributed Medicare Beneficiaries					
	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (%)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated Impact (%)	*p*-value for estimated impact
Transitional care and quality of care outcomes (annualized rate per 1,000 or percentage)												
Likelihood of 14-day followup visit												
Baseline	62.8%	62.9%	—	—	—	—	67.3%	67.5%	—	—	—	—
Year 1	62.4%	62.7%	0%	1%	0%	0.757	66.5%	67.2%	0%	1%	-1%	0.502
Year 2	62.0%	62.9%	-1%	1%	-1%	0.246	66.0%	67.2%	-1%	1%	-2%	0.185
Number of Observations: Followup visit	865,146						467,375					
ACSC admissions												
Baseline	47	49	—	—	—	—	137	141	—	—	—	—
Year 1	64	66	1	1	1%	0.619	164	164	3	4	2%	0.482
Year 2	64	66	1	1	1%	0.549	158	157	5	4	3%	0.273
Number of Observations: ACSC admissions	3,578,630						917,020					
Likelihood of 30-day readmission												
Baseline	13.3%	13.3%	—	—	—	—	16.5%	16.8%	—	—	—	—
Year 1	14.7%	15.2%	-1%	0%	-3%	0.133	18.4%	18.9%	0%	1%	-1%	0.768
Year 2	14.4%	14.5%	0%	0%	-1%	0.778	17.9%	17.9%	0%	0%	2%	0.484
Number of Observations: Readmissions	865,146						467,375					
Likelihood of an ED revisit within 30 days of an outpatient ED visit												
Baseline	4.3%	4.4%	—	—	—	—	9.5%	9.5%	—	—	—	—
Year 1	4.4%	4.4%	0%	0%	-1%	0.774	8.8%	8.8%	0%	0%	0%	0.929
Year 2	4.9%	4.9%	0%	0%	1%	0.59	9.3%	9.2%	0%	0%	1%	0.603
Number of Observations: ED revisit	3,578,630						917,020					

Source: Medicare claims data for the period October 2010–September 2014.

Note: Impact estimates and predicted means are regression adjusted for baseline patient characteristics (including HCC scores) and baseline practice characteristics. Each impact estimate is based on a difference-in-differences analysis and reflects the difference in the regression-adjusted average outcome for beneficiaries in CPC practices in the postintervention period compared to the preintervention period relative to the same difference over time for beneficiaries in matched comparison practices. For ED revisit, we also control for chronic conditions at baseline. For the readmissions and follow-up visits equations estimated at the discharge level, we also control for discharge-level risk factors. Number of observations includes the total number of treatment and comparison group observations across all years.

*/**/***Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

FFS = fee-for-service; ACSC = ambulatory care sensitive condition; DME = durable medical equipment; ED = emergency department; PCP = primary care physician.

There was not a pattern of variation by practice type. We also checked whether impacts on expenditures varied for subgroups of *practices.* We examined variation in impacts for three sets of subgroups: (1) practices that, when CPC began, were recognized as PCMHs by NCQA or their state;[60] (2) that we believed to be more likely, on average, to have greater access to resources for transformation (defined as those practices that, according to the SK&A data, had six or more physicians or were affiliated with a larger organization); or (3) that were small (1 or 2 physicians), medium (3 to 10 physicians), or large (10 or more physicians). We did not find any statistically significant evidence for systematic variation in impacts by either PCMH status or by practice size or organizational affiliation status (not shown). There were some differences for the third subgroup based on practice size alone, but they followed no consistent pattern.

7.3.2. Service use

Among all patients, cumulative impact estimates showed no significant effects on the two key utilization outcomes (hospitalizations and outpatient ED visits) over the first two years of CPC (Table 7.1A). In addition, in separate yearly estimates, there were almost no statistically significant effects on Medicare service use outcomes (Table 7.7).

The only exceptions were in these findings:

- Decreases in primary care clinician visits in all settings per 1,000 beneficiaries by 180 (2 percent) and 273 (3 percent) in years 1 and 2, respectively
- An increase in observation stays per 1,000 beneficiaries by 4 (8 percent) in year 2 only

Although hospitalizations and ED visits declined by 2 and 1 percent, respectively, in each of the first two years, these effects were not statistically significant.

For high-risk patients, the pattern was similar to that for all patients, with the only statistically significant effects being in the following findings:

- Annual primary care clinician visits in all settings per 1,000 beneficiaries, which declined by 319 (3 percent) and 278 (2 percent) in years 1 and 2, respectively, relative to the comparison group
- Observation stays per 1,000 beneficiaries that increased by 9 (9 percent) relative to the comparison group in year 2 only

For the high-risk group, declines of 2 percent in hospitalizations and of 1 percent in ED visits in year 1 were not statistically significant.

7.3.3. Claims-based quality of care

There were minimal effects on the claims-based quality-of-care process and outcome measures we examined. The only statistically significant impact on the quality-of-care *process*

[60] Although other sources of PCMH recognition exist, we used only NCQA and state recognition because we did not have data from other certifying organizations for both the CPC and the comparison practices. Nearly 40 percent of CPC practices had medical home recognition from their state or from NCQA when they applied to CPC, and about 80 percent of those with any medical home recognition received it from one of these two sources.

or transitional care measures among all patients during the first two years of CPC was an 11 percent reduction in one of the two summary measures of quality of care for patients with diabetes—the percentage of beneficiaries with diabetes who had none of the four recommended tests performed in year 2 (Table 7.8).

In the high-risk subgroup, the only statistically significant effects were small but statistically significant improvements in one summary measure and two of the four individual process-of-care measures for patients with diabetes (Table 7.8):

- The likelihood of having an eye exam increased by 2 percentage points (4 percent) in year 1.
- The likelihood of urine protein testing increased by around 2 to 3 percentage points (4 percent of the comparison group rate) in each year.
- The diabetes summary measure for the likelihood of a beneficiary receiving all four tests (HbA1c, lipid, eye exam, and urine protein testing) increased by 3 percentage points (around 10 percent) in each year. Nonetheless, there were substantial opportunities for improvement. Although only 5 percent of both high-risk and all patients with diabetes in the CPC and comparison groups had not received any of the four tests, only about a third of patients received all four.

There were no significant effects on the two continuity of care measures—the percentage of primary care visits at the beneficiary's attributed practice and the percentage of all primary and specialty care visits at the attributed practice. Both measures declined similarly for both the CPC and comparison groups by 8 to 12 percentage points between the pre- and postintervention periods. Because continuity is measured with respect to the practice that the patient was attributed to in quarter 1, continuity is high during the preintervention period, by definition. (The preintervention period overlaps with the quarter 1 lookback period, and beneficiaries have to have a plurality of their visits at a practice during this lookback period to be attributed to that practice). It is not surprising that continuity fell over time, because beneficiaries who became attributed to different practices after CPC began have low continuity with their quarter 1 practice. In addition, it is possible that CPC practices used the nonvisit-based care management fees to cover some interactions with their patients that they did not bill for, which would make the claims-based measure of continuity look worse than it really is.

Finally, for the quality-of-care outcome measures, there were no statistically significant effects on ACSC admissions, the likelihood of an unplanned 30-day readmission, or the likelihood of an ED revisit within 30 days of an outpatient ED visit among either all patients or high-risk patients.

7.3.4. Aggregate impacts of CPC

We calculated aggregate impacts, by year, across all Medicare FFS beneficiaries attributed to CPC practices for five outcome measures: (1) total Medicare expenditures without fees, (2) number of hospitalizations, (3) number of outpatient ED visits, (4) number of primary care physician visits, and (5) 30-day unplanned readmissions. For the first four outcomes, we used the individual-level estimates from the difference-in-differences regressions, together with the total number of eligible beneficiary months across beneficiaries attributed to CPC practices in each year, to obtain the aggregate impacts, as well as the 90 percent confidence intervals for these

impacts. For readmissions, we used the discharge-level estimates and the total number of discharges across all CPC beneficiaries in a year to obtain these aggregate impacts (Table 7.9).

The only aggregate impacts that were statistically significant at the 10 percent level in the CPC-wide sample for these five outcomes, and appear in bold font in Table 7.9, were the year 1 savings of $58.5 million in total Medicare expenditures without fees, the cumulative reduction in Medicare expenditures without fees of $91.6 million across the two years, and reductions in primary care physician visits by 58,468 and 100,869 in year 1 and year 2, respectively, and by a cumulative amount of 159,690 across the two years.

Table 7.9. Aggregate CPC-wide results, year 1 and year 2

Outcome	Year 1	90% CI	Year 2	90% CI	Year 1 and Year 2 combined	90% CI
Aggregated impacts across the 7 CPC regions						
Total Medicare expenditures without CPC fees (in millions of dollars)	**-$58.5**	**-$105.2 to -$15.6**	-$35.5	-$88.7 to $17.7	**-$91.6**	**-$174.9 to -$8.3**
Hospitalizations	-1,949	-3,573 to 0	-1,847	-4,064 to 739	-3,472	-7,637 to 0
Outpatient ED visits	-974	-3,573 to 1,299	-1,478	-4,803 to 1,847	-2,777	-7,637 to 2,777
Primary care visits	**-58,468**	**-93,548 to -23,387**	**-100,869**	**-149,641 to -51,728**	**-159,690**	**-233,980 to -86,094**
30-day unplanned readmissions	-448	-985 to 90	-96	-576 to 384	-556	-1,483 to 371
Impact estimates at the beneficiary or discharge level across the 7 CPC regions						
Total Medicare expenditures without CPC fees (per beneficiary per month)	**-$15**	**-$27 to -$4**	-$8	-$20 to $4	**-$11**	**-$21 to -$1**
Hospitalizations (per 1,000 beneficiaries per year)	-6	-11 to 0	-5	-11 to 2	-5	-11 to 0
Outpatient ED visits (per 1,000 beneficiaries per year)	-3	-11 to 4	-4	-13 to 5	-4	-11 to 4
Primary care visits (per 1,000 beneficiaries per year)	**-180**	**-288 to -72**	**-273**	**-405 to -140**	**-230**	**-337 to -124**
30-day unplanned readmissions (percentage)	-0.5	-1.1 to 0.1	-0.1	-0.6 to 0.4	-0.3	-0.8 to 0.2

Source: Analysis of Medicare claims data from the Chronic Conditions Warehouse Research Identifiable Files for 2011–2014.

Notes: This table calculates the estimated effects over all CPC regions and beneficiaries who were in the intent-to-treat analysis sample for year 1 and year 2 of CPC. The total number of treatment group beneficiaries attributed to CPC practices in the annual analysis sample was 365,110 in year 1 and 408,206 in year 2. The number of eligible beneficiary months for the same number of CPC beneficiaries were 3,897,842 in year 1 and 4,433,801 in year 2, and the number of eligible index discharges (for readmissions) were 89,511 in year 1 and 95,924 in year 2. For calculating the cumulative aggregate impacts (across year 1 and year 2 combined), we used the impact estimates across the two years taken together and the total number of eligible beneficiary months (8,331,643) and total number of discharges (185,435) across the two years. Impact estimates are from difference-in-differences regressions using both patient- and practice-level control variables from the pre-CPC period. See Section 7.2 for a full list of measures and definitions, as well as a discussion of methods. Bold estimates indicate statistical significance at the $p < 0.10$ level.

7.4. Discussion

During the first two years, CPC reduced total monthly Medicare FFS expenditures without CPC care management fees by a statistically significant $11 per beneficiary per month, or 1 percent. However, these savings were not enough to cover the care management fees paid, which averaged $18 per month. The savings in gross Medicare expenditures were concentrated in inpatient and skilled nursing facility settings over the first two years. The results for Medicare expenditures were robust to alternative model specifications. Although there were favorable initiative-wide reductions in hospitalizations and outpatient ED visits, these estimates were not statistically significant. The initiative-wide results for Medicare expenditures were mostly driven by effects on the subgroup of patients in the top quartile of baseline risk scores that were similar in percentage terms but larger in magnitude than overall effects. Results for the first two years did not vary by key baseline practice characteristics but did vary by CPC region. Differences on most claims-based quality-of-care measures were not statistically significant, except improvements in some diabetes quality-of-care measures among high-risk beneficiaries with diabetes. These findings suggest that, although two years may be enough time to begin to observe gross changes in cost and utilization resulting from a multipayer effort, it may take longer to reduce service use and generate savings sufficient to offset care management fees.

Prior studies of diverse primary care transformation interventions have been limited and have yielded mixed results (Friedberg et al. 2015; Friedberg et al. 2014; Reid et al. 2010; Gilfillan et al. 2010; Werner et al. 2013; Rosenthal et al. 2013; Kahn et al. 2015; Werner at al. 2014; Heyworth et al. 2014; Jaén et al. 2010; Maeng et al. 2013; Reddy et al. 2015; Reid et al. 2009; Kern et al. 2013). Most published studies examined pilots in single markets (Friedberg et al. 2015; Friedberg et al. 2014; Reid et al. 2010; Gilfillan et al. 2010; Werner et al. 2013; Rosenthal et al. 2013), with small numbers of practices (Reid et al. 2010; Gilfillan et al. 2010; Werner et al. 2013; Rosenthal et al. 2013), or one to a few payers (Friedberg et al. 2015; Gilfillan et al. 2010; Werner et al. 2013; Rosenthal et al. 2013; Kahn et al. 2015; Werner at al. 2014), or did not examine costs (Friedberg et al. 2015; Rosenthal et al. 2013; Werner at al. 2014; McCall et al. 2015). Three studies operate in multiple markets and serve large numbers of practices or clinics (Kahn et al. 2015; Werner at al. 2014; McCall et al. 2015), but two of these are in unique settings and with only one payer (Kahn et al. 2015; Werner at al. 2014), and the other has not yet examined outcomes (McCall et al. 2015). Thus, this study of the impacts of CPC after two years is unique in its combination of the significant investment from CMS and other payers through multipayer collaboration and the large number of practices in diverse regions.

The impact analysis has several limitations. First, participation in CPC is voluntary, and our analysis is limited to Medicare FFS beneficiaries who were attributed to CPC practices. Therefore, the results may not be generalizable to all primary care practices or all patients in a practice. However, both the regions and the practices selected are diverse, and outcomes for patients in CPC practices are being compared to those of patients in practices with similar characteristics and prior outcomes. Second, the measures of quality of care that are available in the claims data are limited. Third, although the study used a careful and thorough method to match CPC practices to comparison practices on observed characteristics, there could still be differences in unobserved characteristics between the two groups of practices before CPC began that led to differences in outcomes (in either direction) that were not caused by CPC. Furthermore, the estimated impacts started in year 1, earlier than expected, so it is unclear whether the favorable estimates were true effects caused by CPC or the result of other factors.

8. WHAT TYPES OF PRACTICE TRANSFORMATION ACTIVITIES ARE LINKED TO REDUCTIONS IN HOSPITALIZATIONS?

The first seven chapters of this report have shown that, over the first two years, CPC delivered sizable enhanced payments, performance feedback, and learning to the practices; practices, on average, transformed the delivery and organization of care to their patients, with the largest improvements in risk-stratified care management and access; and, relative to the comparison group, CPC practices generated small improvements in patient experience and small reductions in gross Medicare FFS expenditures, driven by reductions in hospital and skilled nursing facility expenditures. This chapter presents preliminary efforts to identify what drove the improvements in patient outcomes. Specifically, we examine what types of transformation in the delivery and organization of primary care among CPC practices—as reported in CPC's annual survey of practices—were linked to reduced hospitalization rates after CPC began. We do not include comparison practices in this analysis because baseline data on the delivery and organization of care, used to measure practice transformation over time, were collected for CPC practices only.

We selected hospitalization rates as our outcome for this initial effort because reducing hospitalizations is important to patients and is the largest potential way to reduce Medicare expenditures. We opted to use hospitalization rates instead of expenditures, because the former is somewhat less affected by outliers and by differences across geographic areas in medical cost inflation. We measure the change in hospitalization rates for each practice between the year before CPC began (the baseline year, October 2011–September 2012) and the second year of CPC operations (October 2013–September 2014), the latest year of data available for this report. This timing closely aligns with the dates of the follow-up (that is, round 2) practice survey, fielded from April through July 2014. Moreover, limiting our examination of outcomes to just the second year (instead of the first two years) allows some time for improvements in care delivery to generate the desired improvements in outcomes, and reduces the possibility that the estimated relationships between practice transformation measures and hospital reductions are dampened by inclusion of time periods before the improvements in care delivery were more fully and effectively implemented. This work will be updated and expanded during the remaining two years of CPC to capture additional changes in transformation and outcomes.

8.1. Key takeaways

Overall, improvements in approaches to deliver primary care are related to reductions in hospitalization rates, but they only account for a small amount of the variation in reductions across practices. Most CPC practices improved in multiple domains of care delivery during CPC's first two years, making it difficult to identify the independent relationship of improvement in a specific approach to delivering care to reductions in hospitalization rates. We find that:

- Improvements in the overall score on the modified PCMH-A instrument, an index constructed from 37 self-reported items in CPC's annual practice survey, were associated with reductions in hospitalization rates.

  - On average, CPC practices improved their overall modified PCMH-A score by 2.3 points (out of a maximum of 12) and reduced their patients' hospitalization rate by 5.3 percent between baseline and the second year of CPC.[61,62]
  - Each one-point improvement in the overall modified PCMH-A score was statistically significantly associated with an additional reduction in the hospitalization rate of 1.15 percentage points. Thus:
    - Practices that made no discernible improvements in care delivery (did not improve their overall score at all) reduced their number of hospitalizations per 1,000 beneficiaries per year by an average of 2.6 percent, compared to their own baseline value.
    - Practices with an average improvement (2.3 points) in their overall PCMH-A score reduced hospitalization rates by twice as much (5.3 percent) as those with no score improvement, on average.
    - Practices in the top quartile of overall score improvement, with an average improvement of 4.5 points in their overall score, reduced hospitalization rates by an additional 2.5 percentage points beyond what the average practice achieved (that is, by an average of 7.8 percent).

- It is difficult to quantify the *independent* contribution of improvement in a particular PCMH-A item or domain (described in Table 5.2) to a reduction in hospitalization rates. Practices making improvements in one aspect of care delivery are also making improvements in other aspects, confounding the ability of regression models to estimate the marginal association of the change in a given domain with reductions in hospitalization rates.
- At the same time, bivariate regressions indicate that improvements in specific domains and items were related to reductions in hospitalization rates:
  - Improvements in three out of the seven PCMH-A domains—planned care for chronic conditions and preventive care, coordination of care across the medical neighborhood, and patient and caregiver engagement—were statistically significantly associated with reduced hospitalization rates. Improvements in the other four domains (access to care, continuity of care, risk-stratified care management (RSCM), and continuous improvement driven by data) were not statistically significantly associated with reduced hospitalization rates.
  - Among the 37 individual items that comprise the seven domains of primary care delivery, improvements in 15 items belonging to six domains (all but the continuity of care domain) were statistically significantly related to reductions in hospitalization rates.

[61] This rate of decline is consistent with national rates over a slightly earlier period. From 2011–2012 to 2012–2013, hospitalizations per 1,000 Medicare FFS beneficiaries decreased from approximately 300 to 284, or by about 5.5 percent (Daughtridge et al. 2014).

[62] These hospitalization rates are based on the data set used for quarterly feedback reports to practices, which differs substantially from the data set used for the impact analysis in Chapter 7. See the Methods section later in the chapter for more details.

- For two of the three domains associated with reductions in hospitalization rates—care coordination and patient engagement—practices making the largest improvements tended to be ones that had the lowest scores on the domain at the start of CPC. Therefore, the relationship between the domain score improvements and hospital reductions weakens when baseline level is controlled for. For the third domain—planned care—hospitalization rates declined with improvements, regardless of the initial scores.
- Although improvements in the overall PCMH-A score and some domain and item scores were related to reduction in hospitalization rates, they explain very little (1 to 2 percent) of the variation in reductions across CPC practices.[63]

8.2. Methods

We use bivariate and multivariate regressions to estimate the association between improvements in practice ratings of care delivery components and the change in hospitalization rates.

Practice sample. For this analysis, we examined three-quarters of CPC practices (N = 362). We excluded the smallest 25 percent of practices (in terms of the number of attributed Medicare FFS patients), because outcome estimates based on small numbers of patients are highly variable, creating noise that makes it difficult to determine true links between delivery approaches and hospitalization rates. This resulted in the exclusion of all practices with fewer than 330 attributed Medicare FFS beneficiaries in 2014 (the initiative's second year). As a test of the sensitivity of the results, we ran separate analyses using all the practices. We report these results in Section 8.4.

Patient sample. The patient sample for the baseline year includes all Medicare FFS beneficiaries attributed during the first quarter of CPC based on their utilization patterns during the preceding 24 months, plus those who met the criteria for attribution to a CPC practice but died before CPC startup.[64] The sample for the second year of CPC (October 2013–September 2014) includes all beneficiaries attributed at some time during that year, including those who died.

[63] The low R-squareds suggest that many factors, observed and unobserved, affect a practice's (risk-adjusted) hospitalization rate. However, they do not mean that the significant relationship estimated is unimportant, small, or irrelevant. The t-statistic for the coefficient on PCMH-A score increase is highly significant statistically and implies that, *on average,* practices with larger score increases have substantially larger reductions in hospitalizations. The low R-squared simply means that the prediction from the regression is not likely to be very accurate for a particular practice. The t-statistic also implies that it is highly unlikely that we would find a coefficient this large if there is no real relationship between the PCMH-A score increase and hospital reductions.

[64] These samples are the same as those used for providing quarterly feedback reports to practices. By augmenting the baseline sample to include beneficiaries who would have been attributed to a CPC practice had they not died before CPC startup, we ensure that it is consistent in definition with the sample in the second year of CPC, which includes beneficiaries who may have died during the year. In contrast, the impact analysis reported in Chapter 7 includes baseline and follow-up data only for beneficiaries attributed to the CPC practice who were alive at the start of CPC (and therefore alive throughout the baseline period). Given the much higher rate of hospitalizations among beneficiaries in their last year of life, this difference in samples results in very different patterns of change over time in the rate of hospitalizations per attributed patient in the two analyses.

Data. We analyzed data from several sources:

- Medicare FFS claims data were used to construct the percentage change in the number of hospitalizations per 1,000 beneficiaries per year between the year before the start of the initiative and the second year of CPC.
- Several data sources, including Medicare EDB data; CMS's HCC scores, SK&A, NCQA, Area Resource File, and HRSA were used to construct baseline practice and practice-level patient characteristics used to risk adjust the percent change in hospitalization rates.
- The modified version of the PCMH-A module of the CPC practice survey fielded in October–December 2012 and April–July 2014 was used to describe the intensity and comprehensiveness of different aspects of primary care delivered by CPC practices. We used factor analysis to create domain scores and an overall score from the 37 items included in both survey rounds.

Outcome. We examined the regression-adjusted percentage change in hospitalizations per 1,000 beneficiaries per year from the year before CPC to the second year of CPC as our outcome for the analysis. We adjusted the change for several region (or market) and practice-level patient-related characteristics[65] to control for factors other than the practice's approach to delivering primary care, and how it transformed over time, that might affect changes in hospitalization rates.

We selected the change in the hospitalization rate as our outcome, because reducing avoidable hospitalizations through better coordination of, and access to, primary care is beneficial for patients, in addition to being the largest driver of Medicare expenditures. In addition, the hospitalization rate is less affected by outliers than our other key outcome measure, total Medicare expenditures. The *p*-value (0.13) reported in Chapter 7 for the estimated effect of CPC on hospitalization rates relative to a comparison group during the second year was just above the conventional 0.10 significance level used for testing the hypothesis that an effect is zero. However, average expenditures on hospitalizations were significantly lower for the CPC group than the comparison group in year 2. Thus, reductions in hospitalization rates are an important driver of reductions in overall Medicare costs, justifying its use in this analysis. The change in hospitalization rates from the year before CPC to the second year of CPC varied widely across CPC practices, ranging from a decrease of more than 50 percent to an increase of 64 percent.[66]

[65] To control for factors that might affect a practice's ability to reduce hospitalizations, we regression-adjusted the percentage change in hospitalizations between the year before CPC began (baseline) and the second year of CPC (months 13 to 24 after CPC began) for four region (or market) characteristics (Medicare Advantage penetration rate, median household income, percentage urban, and whether in a medically underserved area), and baseline practice-level patient characteristics (age distribution, percentage male, race/ethnicity, average HCC score, percentage dually eligible for Medicare and Medicaid, and distribution of original reason for Medicare [age, disability, other]). See Appendix J, Table J.1 for regression results.

[66] The bottom quarter of the practices reduced the hospitalization rate by more than 15 percent and the middle half of the practices by more than 6 percent. At the other end of the distribution, the top quarter of practices increased their rate by more than 3 percent.

Explanatory variables. The data on the practices' self-reported approaches to delivering primary care and transformation in these approaches come from the modified PCMH-A module in the practice survey:

- Thirty-seven modified PCMH-A item scores included in both rounds of the survey
- Seven modified PCMH-A domain scores constructed from a factor analysis of these 37 items, namely:
  - Access to care
  - Continuity of care
  - Planned care for chronic conditions and preventive care
  - Risk-stratified care management
  - Patient and caregiver engagement
  - Coordination of care across the medical neighborhood
  - Continuous improvement driven by data
- Overall modified PCMH-A score constructed from the factor analysis

Each item was measured on a 1 to 12 scale. We normalized the domain and overall scores to range from 1 to 12, like the individual items. See Appendix D, Table D.1 for a list of the PCMH-A items.

The modified PCMH-A domains listed above are similar to, but do not completely align with, CPC Milestone definitions. For example, the CPC definition of risk-stratified care management is much broader than the definition of the RSCM domain in the modified PCMH-A module; the CPC definition corresponds to the four items from the RSCM domain, and nine items from other PCMH-A domains (including five from the Planned Care for Chronic Conditions and Preventive Care domain—for example, whether visits address both planned and acute care needs and whether medication reconciliation is done regularly). This kind of incomplete overlap is also true for other CPC Milestones.[67] It is important to interpret findings from the analysis in this context.

8.3. CPC practices made improvements in primary care delivery over time

CPC practices made sizeable improvements in primary care delivery, as reported on the practice surveys, between baseline and PY2014. The pattern and average magnitude of improvements in care delivery for the 362 larger practices in this analysis sample are nearly identical to those reported for all CPC practices in Chapter 5 (see Appendix D, Table D.2a). Among the seven domains, risk-stratified care management improved the most, followed by access to care. Among the 37 individual questions that comprise the domains, two of the three that improved the most (by an average of 4 or more points on a 12-point scale) belong to the risk-stratified care management domain; the third belongs to the access to care domain. We

[67] See Appendix J, Table J.2 for a complete crosswalk of CPC Milestones and modified PCMH-A domains/items.

found that there was substantial variation among practices in the improvements made across the seven domains and the overall score on the modified PCMH-A, making them useful candidates for explaining the variation in reductions in hospitalization rates.

8.4. Improvements in some care delivery domains were associated with reduced hospitalization rates

To examine whether and how improvements over time in practices' primary care delivery were associated with reduced hospitalization rates, we estimated bivariate regressions of the risk-adjusted change in hospitalization rates on the change in score from 2012 to 2014 for each of the 37 individual items, each of the seven domains, and the overall score on the modified PCMH-A. These analyses are exploratory and are meant to provide the first indications of how primary care practice transformation might be related to hospitalization rate reductions.

Table 8.1 shows the relationship between change in domain scores and change in hospitalization rates. Under each domain, the table also shows the individual items for which improvement was statistically significantly related to reductions in hospitalization rates. Results for items not significantly related to reductions in hospitalization rates are shown in Appendix J, Table J.3.

The fourth column in Table 8.1 ("Bivariate estimate") shows how much the percentage change in hospitalization rates changed with a one-point increase in the item, domain, or overall score. An increase in the overall modified PCMH-A score was statistically significantly related to a reduction in hospitalization rates. Specifically, a one-point increase in the overall score was associated with an additional decrease in the hospitalization rate of 1.15 percentage points (that is, hospitalization rates would decline by about 6.45 percent compared to the 5.3 percent observed on average). A three-point increase in the overall score (from the mean of 6.5 to a score of 9.5, say) was associated with a reduction in hospitalization rate of almost 3.5 percentage points more than what would be observed for an otherwise identical practice with no score change (that is, hospitalization rates would decline by about 8.8 percent compared to the 5.3 percent observed on average). However, although there is a clear association between the change in the overall score and reduction in hospitalization rates, the model explains only a small proportion of the variation in hospitalization reductions (R-squared = 0.02). This low explanatory power could be due to several reasons, including the fact that we are using a risk-adjusted outcome that already accounts for the variation in hospitalization rates due to several practice and practice-level patient characteristics.[68]

[68] Another reason for the low explanatory power is the use of the percentage change in hospitalizations rates as the dependent variable, rather than using the baseline value to predict the current year (which would yield a much larger R-squared). Percentage changes are notoriously difficult to predict accurately. The small number of patients in many of the practices also means that much of the variance in the dependent variable is due to chance and cannot be explained by observed factors.

Table 8.1. Bivariate regression estimates of the relationship between practice transformation measures and risk-adjusted change in hospitalizations per 1,000 beneficiaries per year

Modified PCMH-A domain/item	Baseline mean	Mean change between baseline and PY 2014	Risk-adjusted change in hospitalization rates with a 1 point increase in the domain/item score (in percentage points)		
			Bivariate estimate		Controlling for baseline domain/item score
			Coefficient (*p*-value)	R-squared	
Overall modified PCMH-A score	**6.45**	**2.29**	**-1.15 ** (0.02)**	**0.02**	**-1.08 (0.12)**
Access to care domain	**6.96**	**2.61**	**-0.64 (0.12)**	**0.01**	**-0.57 (0.22)**
Appointment systems are flexible and accommodate customized visits	10.15	0.32	-0.88 ** (0.04)	0.01	-1.20 ** (0.04)
After-hours access to a physician, PA/NP, or nurse	8.25	1.66	-0.66 ** (0.03)	0.01	-0.63 (0.13)
Continuity of care domain	**9.29**	**0.76**	**-0.21 (0.58)**	**0.00**	**-0.78 (0.18)**
Planned care for chronic conditions and preventive care domain	**7.66**	**1.46**	**-1.00 ** (0.01)**	**0.02**	**-1.01 * (0.07)**
Visits address both acute and planned care needs	7.79	1.16	-0.97 *** (0.00)	0.03	-1.31 *** (0.00)
Non-physician practice team members play key roles	8.45	1.30	-0.61 ** (0.02)	0.02	-0.49 (0.21)
Medication reconciliation is regularly done	10.19	0.48	-0.94 ** (0.02)	0.02	-0.92 * (0.09)
Risk-stratified care management domain	**4.58**	**5.09**	**-0.38 (0.17)**	**0.01**	**-0.77 (0.17)**
Registry or panel-level data are regularly available to manage care	5.49	3.22	-0.40 * (0.08)	0.01	-0.75 ** (0.03)
Patient and caregiver engagement domain	**6.59**	**1.26**	**-0.67 * (0.05)**	**0.01**	**-0.44 (0.35)**
Involving patients in decision-making and care	6.83	1.30	-0.62 ** (0.03)	0.01	-0.43 (0.28)
Self-management support	5.78	2.01	-0.49 ** (0.05)	0.01	-0.33 (0.33)
Assessing patient and family values and preferences	6.48	1.48	-0.45 ** (0.05)	0.01	-0.74 ** (0.04)
Coordination of care across the medical neighborhood domain	**6.63**	**1.44**	**-0.97 ** (0.04)**	**0.01**	**-0.56 (0.35)**
Tracking of patient referrals to specialists	7.77	0.95	-0.60 ** (0.02)	0.02	-0.26 (0.44)
My practice knows the total cost to payers of medical care	2.83	2.17	-0.69 *** (0.01)	0.02	-0.62 * (0.06)
Linking patients to supportive community-based resources	5.86	2.46	-0.51 * (0.09)	0.01	-0.62 (0.10)

Modified PCMH-A domain/item	Baseline mean	Mean change between baseline and PY 2014	Risk-adjusted change in hospitalization rates with a 1 point increase in the domain/item score (in percentage points)		
			Bivariate estimate		Controlling for baseline domain/item score
			Coefficient (*p*-value)	R-squared	
Continuous improvement driven by data domain	**5.78**	**2.31**	**-0.49 (0.13)**	**0.01**	**-0.23 (0.60)**
QI activities are used to meet organizational goals	6.71	2.11	-0.54 ** (0.04)	0.01	-0.27 (0.47)
The responsibility for conducting QI activities is shared by all staff	5.82	2.50	-0.41 * (0.08)	0.01	-0.25 (0.45)
Organization's hiring and training processes include a focus on QI	6.09	1.41	-0.39 * (0.08)	0.01	-0.32 (0.29)

Source: Mathematica analysis of FFS Medicare claims data and the PCMH-A module of the baseline and PY2014 treatment practice surveys. Baseline practice variables used to risk-adjust practices' change in hospitalization rates come from data from Medicare EDB, CMS's HCC scores, SK&A, NCQA, Area Resource File, and HRSA. For descriptions of items, see Appendix D, Table D.1.

Notes: Regression estimates are based on the three-quarters of practices (N = 362) with the largest number of attributed Medicare FFS patients. OLS regressions were used to generate estimates. Each row represents the estimated coefficient on the change in domain/item score from two separate regressions: (1) a regression of the percentage change in hospitalization rates on the change in domain/item score, and (2) a regression of the percentage change in hospitalization rates on the change in domain/item score controlling for the baseline domain/item score. Means and regression coefficients for domains are in bold. *p*-values are in parentheses under each regression coefficient. The table shows regressions estimates for 15 of the 37 items for which the improvement in score was statistically significantly related to reductions in hospitalizations. Estimates for the remaining 22 items are shown in Appendix J, Table J.3.

*** Statistically significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Across the seven domains of primary care delivery, improvements in three—planned care, care coordination, and patient engagement—had a statistically significant relationship to reductions in hospitalization rates. A comparison of the coefficients in the fourth column of Table 8.1 shows that improvements in planned care and care coordination were each associated with reductions in hospitalization rates similar in magnitude to those observed for improvements in the overall modified PCMH-A score; improvement in patient engagement had a smaller relationship to reductions in hospitalization rates. Table 8.2 shows how much the percentage reduction in hospitalization rates would be if a practice with an average reduction (5.3 percent), experienced an additional increase of one point for each of the domains.

Table 8.2. Reduction in hospitalization rates for the average practice due to improvement in key areas of primary care delivery

Domain	Reduction in hospitalization rates with a 1 point larger improvement in domain score (*p*-value)
Domains for which an improvement in score was statistically significantly related to reductions in hospitalizations rates	
Planned care for chronic conditions and preventive care	6.30 percent (0.01)
Coordination of care across the medical neighborhood	6.27 percent (0.04)
Patient and caregiver engagement	5.97 percent (0.05)
Domains for which an improvement in score was not statistically significantly related to reductions in hospitalizations rates	
Access to care	5.94 percent (0.12)
Continuous improvement driven by data	5.79 percent (0.13)
Risk-stratified care management	5.68 percent (0.17)
Continuity of care	5.51 percent (0.58)

Improvement in risk-stratified care management was also associated with reduced hospitalizations, but the relationship is not statistically significant. Given the limited definition of RSCM compared to the corresponding CPC Milestone definition, this finding is not surprising. At the same time, the domain that corresponds most heavily to the CPC definition—Planned Care—is strongly associated with reductions in hospitalization rates.[69]

Breaking the relationship between improvement in PCMH-A measures and hospitalization rates down even further to the 37 individual items, we find that improvements in 15 items were significantly related to reductions in hospitalization rates. Although the many tests performed on individual items (37) suggest that we are likely to find some significant relationships (for example, 3 or 4) simply by chance, the fact that we find 15 significant relationships suggests that many of these are not due to chance. These items, each scored on a scale of 1 to 12 indicating progressively more intensive or comprehensive approaches to delivering that aspect of primary care, belonged to the areas of planned care (3 of the 15 items), patient engagement (3), care coordination (3), continuous improvement driven by data (3), access to care (2), and risk-stratified care management (1).

[69] To test the sensitivity of results, we ran separate analyses using all CPC practices. We found that the estimated associations between the reductions in hospitalization rates and the change in modified PCMH-A overall and individual domain scores, respectively, were in the same direction but generally somewhat smaller in magnitude than those for the restricted sample and had larger variances, as expected. Therefore, they were not statistically significant. The only exception is the access to care domain, whose associations increased slightly in magnitude and went from being just over the 0.10 statistical significance level in the restricted sample to being significant at the 0.10 level in the full sample. In future analyses, we will explore ways to reintroduce the smaller practices, without diluting the relationships that exist among the larger ones.

The three items for which improvements had the strongest association with reductions in hospitalization rates, from largest to smallest estimated relationship, were:

1. **Visits** (practices code themselves with a top score when visits are organized to address both acute and planned care needs and tailored guideline-based information is used in team huddles to ensure all outstanding patient needs are met at each encounter).
2. **Medication reconciliation** (a top score indicates reconciliation is regularly done for all patients and documented in the patient's medical record).
3. **Appointment systems** (a top score indicates that appointment systems are flexible and can accommodate customized visit lengths, same-day visits, scheduled follow-up, and multiple provider visits).

Improvement in the first item, visits, was associated with a reduction in hospitalization rates similar to that associated with improvements in the overall PCMH-A score; a one-point improvement in the visit score of an average practice was associated with a reduction in hospitalization rates of an additional one percentage point over the average reduction, to 6.3 percent.

For two of these three items—medication reconciliation and appointment systems—CPC practices had very high baseline scores—on average, more than 10 points on the 12-point scale—and yet improvement on these items was still related to reductions in hospitalization rates. These results suggest that the association between improvement in care delivery and reduction in hospitalization rates is not limited to aspects of care delivery in which the practice started out as low-functioning at baseline.

We next examined the extent to which these relationships changed when taking into account the differences across practices in initial levels of baseline primary care delivery scores. That is, having a high initial score on a particular domain of care delivery may be more important for achieving hospital reductions than making an improvement in that domain of care. To make this determination, we again ran bivariate regressions, this time also controlling for the baseline values of the respective item, domain, or overall score. These results are shown in the last column of Table 8.1.

When controlling for baseline values of the respective item, domain, or overall score, the relationships between reductions in hospitalization rates and improvements in overall PCMH-A score ($p = 0.12$), care coordination ($p = 0.35$), and patient engagement ($p = 0.35$) become slightly smaller and are no longer statistically significant at the 0.10 level. Improvement in planned care is still related to reductions in hospitalization rates, and the estimated relationship is virtually identical in magnitude, but now is marginally significant ($p = 0.07$). **These results suggest that the relationship between improvement in scores and reduction in hospitalization rates, for some domains, depends, in part, on where the practice started (that is, the baseline domain score).** Overall, for some aspects of primary care delivery, such as care coordination and patient engagement, practices that started with lower baseline levels and made the greatest improvements are the ones that drove the significant association with reductions in

hospitalization rates. In contrast, for planned care, where practices began at baseline mattered less for making improvements associated with reductions in hospitalization rates.[70]

8.5. How do practices that reduced hospitalization rates the most differ from other practices on aspects of primary care delivery?

To identify associations between transformation and reductions in hospitalization rates, we also used a "positive deviance" type of approach, in which we categorized the 362 practices into three groups based on the extent to which they reduced hospitalization rates (see Table 8.3) and compared the three groups on the average domain and overall scores at baseline and the average change in domain and overall scores between baseline and PY2014.

Table 8.3. Categories of practices based on reductions in hospitalization rates between baseline and CPC's second year

Practice category	Risk-adjusted change in hospitalization rates between baseline and PY2014
Largest hospitalization rate reductions (25 percent of practices)	*Reduced* hospitalization rates by 15 to 55 percent (24 percent reduction on average)
Medium reductions or small increases in rate (50 percent of practices)	*Reduced* hospitalization rates by less than 15 percent or *increased* hospitalization rates by less than 3 percent (6 percent reduction on average)
Largest hospitalization rate increases (25 percent of practices)	*Increased* hospitalization rates by 3 to 45 percent (14 percent increase on average)

[70] We made a similar assessment for the 15 items for which improvement was associated with reduced hospitalizations and found that 6 of the 15 items continue to have a statistically significant relationship to hospital reductions after controlling for their baseline scores. These items measure the extent to which:

- Appointment systems are flexible and can accommodate customized visit lengths, same-day visits, scheduled follow-up, and multiple provider visits.
- Visits are organized to address both acute and planned care needs. Tailored guideline-based information is used in team huddles to ensure all outstanding patient needs are met at each encounter.
- Registry or panel-level data are regularly available to assess and manage care for practice populations, across a comprehensive set of diseases and risk states.
- Medication reconciliation is regularly done for all patients and documented in the patient's medical record.
- Assessing patient and family values and preferences is systematically done and incorporated in planning and organizing care.
- The practice knows total cost to payers of medical care for all patients.

Improvements in the remaining nine items are still associated with reductions in hospitalizations; however, the relationships are smaller and no longer statistically significant.

Table 8.4 shows that practices that made the largest reductions in hospitalization rates had started out, on average, with lower scores at baseline on all but one of the domains (continuity of care) and on the overall PCMH-A score, and made greater improvements in these scores by PY2014, closing the score gap with the practices that had the largest increases in hospitalization rates. For example, practices that made the greatest reductions in hospitalization rates started out with an average score of 6.3 at baseline on care coordination—significantly lower than the average score of 6.9 for practices that had the largest increases in hospitalization rates. Between baseline and the second year of CPC, the practices with large reductions in hospitalizations made the largest average improvement in care coordination (statistically significantly larger than the second group), and by the second year, closed the gap with the second group to reach a similar score of around 8 points.

The patterns observed in our analysis of the three groups of practices are consistent with the statistically significant findings from the regression analyses for overall PCMH-A, planned care, care coordination, and patient engagement scores.

Table 8.4. Baseline levels and improvements in modified PCMH-A domains, for practices with varying degrees of success in reducing hospitalization rates

	Practices Grouped by Risk-adjusted Change in Hospitalization Rates between Baseline and PY2014		
	Largest reductions in rates	Medium reductions or small increases in rates	Largest increases in rates
Access to care			
Baseline mean	6.81	6.94	7.13
Mean change between baseline and PY2014	2.86	2.64	2.29**
Continuity of care			
Baseline mean	9.2	9.38	9.2
Mean change between baseline and PY2014	1.02	0.69	0.62
Planned care for chronic conditions and preventive care			
Baseline mean	7.52	7.58	7.94*
Mean change between baseline and PY2014	1.78	1.5	1.07**
Risk-stratified care management			
Baseline mean	4.39	4.55	4.83
Mean change between baseline and PY2014	5.47	5.06	4.8
Patient and caregiver engagement			
Baseline mean	6.3	6.59	6.9**
Mean change between baseline and PY2014	1.52	1.35	0.83**
Coordination of care across the medical neighborhood			
Baseline mean	6.33	6.65	6.9**
Mean change between baseline and PY2014	1.73	1.47	1.1**
Continuous improvement driven by data			
Baseline mean	5.44	5.78	6.12**
Mean change between baseline and PY2014	2.47	2.48	1.8**

	Practices Grouped by Risk-adjusted Change in Hospitalization Rates between Baseline and PY2014		
	Largest reductions in rates	Medium reductions or small increases in rates	Largest increases in rates
Overall modified PCMH-A score			
Baseline mean	6.22	6.44	6.72**
Bottom tertile (%)	40.0	34.8	23.0**
Middle tertile (%)	33.3	35.4	35.2
Top tertile (%)	26.7	29.8	41.8**
Mean change between baseline and PY2014	2.57	2.34	1.92***

Source: Mathematica analysis of FFS Medicare claims data and the PCMH-A module of the baseline and PY2014 treatment practice surveys.

Notes: Estimates are based on the 362 practices with over 330 attributed patients.

The table reports difference of means tests for each row between (1) the practices with the largest declines in hospitalization rates and those with changes in the middle range, and (2) the practices with the largest declines in hospitalization rates and those with the smallest declines. The * signs next to the average for the last two columns denote whether the respective difference was significantly different from zero.

*** Statistically significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.1 level.

8.6. Are some aspects of primary care delivery better at reducing hospitalization rates than others?

To examine the relative importance of the modified PCMH-A domains and items in predicting the reduction in hospitalization rates, we ran a multiple regression of the risk-adjusted percentage change in hospitalization rates on the changes in the seven domain scores. The coefficients from that regression (not reported here) show that none of the seven domains was significantly associated with reductions, including the three domains—planned care, care coordination, and patient engagement—that had been individually associated with reduced hospitalization rates in bivariate analyses. Furthermore, similar to their bivariate regression results, these domains explain a tiny fraction of the variation in hospitalization reductions.[71] These findings, together with the significant relationship found between changes in hospitalization rates and (1) the change in the overall PCMH-A score, and (2) score changes for three of the seven domains, respectively, suggest that **practice change does matter, but the changes in these domains are correlated with each other,**[72] making the relationship between any one domain and hospitalization rates statistically insignificant in the multivariate regression. In other words, practices making improvements in one aspect of care delivery are also making changes in other aspects—making it challenging to estimate the independent effects of change in any single aspect of care and to determine which aspects are more effective than others in reducing hospitalization rates.

[71] Similar results were obtained from a multiple regression of the risk-adjusted percentage change in hospitalizations on changes in the 37 items.

[72] See Appendix J, Table J.4 for correlations between domains.

8.7. Summary and discussion of findings

CPC practices improved how they delivered key aspects of primary care and reduced their patients' hospitalization rates (similar to national rates of decline) between the baseline and second year of CPC. Practices with larger self-reported improvements in an overall measure of primary care delivery experienced larger percentage reductions in hospitalization rates than those with smaller improvements. Improvements in planned care for chronic conditions and preventive care, coordination of care, and patient and caregiver engagement are individually associated with a reduction in hospitalization rates. These domain-level findings are confirmed by similar findings for individual items comprising the domains; improvements in 15 of the 37 individual items on the annual survey of practices are associated with reductions in hospitalization rates, with the strongest associations observed for (1) visits being organized to address both planned and acute care needs, (2) medication reconciliation, and (3) appointment systems, with the first two belonging to the planned care domain. Although improvements in the overall PCMH-A score and in some specific domain and items scores are strongly related to reduction in hospitalization rates, they, independently or as a group, explain little of the variance in these reductions across practices. This reflects the fact that many other factors contribute to practice-level changes in hospitalization rates.

These relationships appear to be driven mostly by practices that had low scores on key aspects of primary care delivery at the start of the initiative. In other words, practices with more room for improvement in their approaches to delivering primary care showed larger improvements in care delivery, on average, and larger reductions in hospitalization rates.

Although practice change matters for reduced hospitalization rates, it is difficult to quantify the independent contribution of improvement in one domain of care delivery to reductions in hospitalization rates, conditional on improvements in other domains. Practices that are making improvements in one domain are also making improvements in other domains, and these simultaneous improvements in more than one domain make it difficult to distinguish the separate effects of each domain.

Our analysis has several limitations. It is correlational and identifies associations between improvements in care delivery and improvements in the outcome that may or may not reflect causal effects. Furthermore, it is possible that the risk adjustment of the outcome may not fully account for patient and practice factors that enhance or impede practices' ability to reduce hospitalization rates and are outside of the practices' control. We also are uncertain of exactly when practices' changes in approaches to care measured by the PCMH-A occurred, so it is unclear whether some of the improvements in care delivery relative to baseline levels had been in place long enough to affect hospitalization rates. Finally, the PCMH-A components are self-reported by the practices, so although they have no financial incentive to misreport, they may not accurately represent the practice's primary care delivery features.

Despite these limitations, these findings show that transforming care delivery along some key dimensions is strongly associated with reduced hospitalization rates, which is consistent with the logic model underlying CPC. We will continue to explore these associations and expect that some aspects of care delivery that do not show up as statistically significant for reducing hospitalization rates in CPC's second year might exhibit stronger relationships in later years of

CPC. We also will examine the association between practice change and other outcomes, such as ED use and Medicare expenditures. Finally, practice transformation is a complex process, and many other factors or combination of factors, other than those identified here, may affect practices' ability to reduce hospitalization rates and expenditures. We will explore these relationships in future analyses.

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REFERENCES

Agency for Healthcare Research and Quality. "CAHPS Clinician & Group Surveys." Available at https://cahps.ahrq.gov/surveys-guidance/cg/index.html. Accessed September 21, 2015.

Agency for Healthcare Research and Quality. "Instructions for Analyzing Data from CAHPS Surveys: Using the CAHPS Analysis Program Version 4.1." Document no. 2015. Available at https://cahps.ahrq.gov/surveys-guidance/survey4.0 docs/2015_instructions_for_analyzing_data.pdf. Updated April 2, 2012.

Daughtridge, G.W., T. Archibald, and P. Conway. "Quality Improvement of Care Transitions and the Trend of Composite Hospital Care." *JAMA,* vol. 311, no. 10, 2014, pp. 1013–1014.

Dehejia, R.H., and S. Wahba. "Propensity Score-Matching Methods for Nonexperimental Causal Studies." *The Review of Economics and Statistics,* vol. 84, no. 1, February 2002, pp. 151–161.

Dehejia, R. "Practical Propensity Score Matching: A Reply to Smith and Todd." *Journal of Econometrics,* vol. 125, 2005, pp. 355–364.

Friedberg, M.W., E.C. Schneider, M.B. Rosenthal, K.G. Volpp, and R.M. Werner. "Association Between Participation in a Multipayer Medical Home Intervention and Changes in Quality, Utilization, and Costs of Care." *JAMA,* vol. 311, no. 8, 2014, pp. 815–825.

Friedberg, M.W., M.B. Rosenthal, R.W. Werner, K.G. Volpp, and E.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.

Gilfillan, R.J., J. Tomcavage, M.B. Rosenthal, et al. "Value and the Medical Home: Effects of Transformed Primary Care." *American Journal of Managed Care,* vol. 16, no. 8, 2010, pp. 607–614.

Heyworth, L., A. Bitton, S.R. Lipsitz, et al. "Patient-Centered Medical Home Transformation with Payment Reform: Patient Experience Outcomes." *American Journal of Managed Care,* vol. 20, no. 1, 2014, pp. 26–33.

Jaén, C.R., R.L. Ferrer, W.L. Miller, et al. "Patient Outcomes at 26 Months in the Patient-Centered Medical Home National Demonstration Project." *Annals of Family Medicine,* vol. 8, suppl. 1, 2010, pp. S57–S67.

Kahn, K.L., J.W. Timbie, M.W. Friedberg, et al. "Evaluation of CMS's Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration. Final Second Annual Report." Santa Monica, CA: RAND Corporation, 2015.

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.

Maeng, D.D., D.E. Davis, J. Tomcavage, T.R. Graf, and K.M. Procopio. "Improving Patient Experience by Transforming Primary Care: Evidence from Geisinger's Patient-Centered Medical Homes." *Population Health Management,* vol. 16, no. 3, 2013 pp. 157–163.

McCall, N., S. Haber, M. Van Hasselt, et al. "Evaluation of the Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration. First Annual Report." Research Triangle Park, NC: RTI International, 2015.

Peikes, D.N., L. Moreno, and S.M. Orzol. "Propensity Score Matching: A Note of Caution for Evaluators of Social Programs." *The American Statistician,* vol. 62, no. 3, 2008, pp. 222–231.

Peikes, D., E.Taylor, S. Dale, et al. "Evaluation of the Comprehensive Primary Care Initiative: Design Report." Report submitted to the U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services. Princeton, NJ: Mathematica Policy Research, Inc., February 28, 2014.

Reddy, A., A. Canamucio, and R.M. Werner. "Impact of the Patient-Centered Medical Home on Veterans' Experience of Care." *American Journal of Managed Care,* vol. 21, no. 6, 2015, pp. 413–421.

Reid, R.J., P.A. Fishman, O. Yu, et al. "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.

Reid, R.J., K. Coleman, E.A. Johnson, et al. "The Group Health Medical Home at Year Two: Cost Savings, Higher Patient Satisfaction, and Less Burnout for Providers." *Health Affairs (Millwood),* vol. 29, no. 5, 2010, pp. 835–843.

Rosenthal, M.B., M.W. Friedberg, S.J. Singer, D. Eastman, Z. Li, and E.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.

Rubin, D.B. "Using Propensity Scores to Help Design Observational Studies: Application to the Tobacco Litigation." Health Services and Outcomes Research Methodology, vol. 2, 2001, pp. 169–188.

Safety Net Medical Home Initiative. "The Patient-Centered Medical Home Assessment Version 4.0." Seattle, WA: The MacColl Center for Health Care Innovation at Group Health Research Institute and Qualis Health, September 2014. Available at http://www.improvingchroniccare.org/downloads/pcmha.pdf. Accessed April 11, 2015.

Shadish, W.R., M.H. Clark, and P.M. Steiner. "Can Nonrandomized Experiments Yield Accurate Answers? A Randomized Experiment Comparing Random and Nonrandom Assignments." *Journal of the American Statistical Association,* vol. 103, no. 484, December 2008, pp. 1334–1344.

Smith, J.A., and P.E. Todd. "Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators?" *Journal of Econometrics*, vol. 125, 2005, pp. 305–353.

Takach, M., C. Townley, R. Yalowich, and S. Kinsler. "Making Multipayer Reform Work: What Can Be Learned From Medical Home Initiatives." Health Affairs, vol. 34, no. 4, 2015, pp. 662–672.

Taylor, E.F., S. Dale, D. Peikes, et al. "Evaluation of the Comprehensive Primary Care Initiative: First Annual Report." Report prepared for the U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services. Princeton, NJ: Mathematica Policy Research, January 2015.

Werner, R.M., M. Duggan, K. Duey, J. Zhu, and E.A. Stuart. "The Patient-Centered Medical Home: An Evaluation of a Single Private Payer Demonstration in New Jersey." *Medical Care*, vol. 51, no. 6, 2013, pp. 487–493.

Werner, R.M., A. Canamucio, J.A. Shea, and G. True. "The Medical Home Transformation in the Veterans Health Administration: An Evaluation of Early Changes in Primary Care Delivery. *Health Services Research,* vol. 49, no. 4, 2014, pp. 1329–1347.

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