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REPORT

Evaluation of the Comprehensive Primary Care Initiative: Third 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 public and private payers—including commercial insurers and Medicaid managed care—aims to improve primary care delivery and achieve better care, smarter spending, and healthier people. CPC also aims to enhance clinician and staff experience.

This third annual report focuses on CPC's third program year (January through December 2015), examining how practices implemented CPC and altered health care delivery during that year, and estimating the impacts on patient experience, cost, service use, and quality-of-care outcomes for attributed Medicare fee-for-service (FFS) beneficiaries over the first 36 months of CPC (October 2012 through September 2015), using the most recent data available. (See Taylor et al. 2015 and Peikes et al. 2016 for results from the first two annual reports, respectively.) Our key findings are:

- **Payer and practice participation remained relatively stable during the first three years of CPC. However, although small, the number of practice withdrawals increased during the final months of PY2015, with most of these practices leaving to join Medicare accountable care organizations (ACOs).**

- **CMS and other participating payers continued to provide significant support for CPC practices and, in general, practices found these supports helped them accomplish the required work.**
  - CPC's financial support for participating practices in PY2015 remained substantial. Practices received a median of $175,775 per practice ($51,286 per clinician) in PY2015, which averaged 12.5 percent of 2015 total practice revenue for CPC practices.
  - In PY2015, most payers started providing new or additional forms of data feedback to practices, improved existing reports, or took steps to further align the contents and timing of feedback across payers.
  - Learning activities in PY2015 encouraged peer-to-peer learning, emphasized the use of data for practice improvement, and engaged practices in implementing small tests of change.

- **Based on data from our practice survey, CPC practices' approach to risk-stratified care management is more advanced than that of comparison practices. CPC practices' approaches to other aspects of care delivery are slightly more advanced than comparison practices.**
  - CPC practices continued to transform their care delivery. The biggest improvements in 2015 were in risk-stratified care management, expanded access to care, and continuity of care.

- Practices faced barriers to bigger improvements, including the burden of quality monitoring and reporting for CMS and other payers, adverse incentives of the FFS payment system, and the lack of an infrastructure for comprehensive and efficient health information exchange between providers.

- **CPC improved patient experience slightly among attributed Medicare FFS beneficiaries, but impacts were small and scattered.**
  - CPC had no discernible effects on the change from 2013 to 2015 in the proportion of patients giving the most favorable responses to questions about their experiences with their practice, measured using six CAHPS composite measures. Responses to individual survey questions showed slightly more statistically significant favorable impacts of CPC on patient experience than one would expect by chance, although impacts were small (2 to 6 percentage points).

- **CPC reduced emergency department (ED) visits for attributed Medicare FFS beneficiaries, but did not generate enough savings to cover Medicare's CPC payments.**
  - Over the first three years, both ED visits and hospitalizations increased by 2 percent less for Medicare FFS beneficiaries in CPC practices relative to those in comparison practices though only the estimated effect on ED visits was statistically significant.
  - Over this time, the average per beneficiary per month (PBPM) Medicare expenditures without CPC care management fees increased by $9 (1 percent) less for attributed Medicare FFS beneficiaries in CPC practices than for the comparison group. This difference offsets slightly more than half the care management fees paid by CMS over that time period, but it was not statistically significant, and estimated effects became less pronounced over time.
  - Including the care management fees, Medicare expenditures increased by $7 more for CPC than comparison practices over the first three years, although the difference was not statistically significant.
  - Although there is an 80 percent probability that CPC generated some reduction in Medicare expenditures (excluding the care management fee) over the first three years, our evaluation indicates the likelihood that those savings were greater than the average $16 PBPM fee paid in our ever-attributed sample of Medicare FFS beneficiaries over the three years is only 0.1 percent. In other words, although CPC did reduce Medicare Part A and B expenditures slightly relative to comparison practices, it is highly unlikely that these Medicare savings generated by CPC were enough to cover Medicare's CPC care management payments.

- **CPC had minimal effects on the limited claims-based quality-of-care process and outcome measures examined.**
  - Differences on most claims-based quality-of-care measures were not statistically significant, except for improvements in some diabetes quality-of-care measures among high-risk beneficiaries with diabetes, and a small reduction in the likelihood of an ED revisit within 30 days of an outpatient ED visit, during Year 3. The outcomes examined

did not include the electronic clinical quality measures (eCQMs) used for quality improvement (QI) and for calculating shared savings.

- **Improvements in CPC practices' care delivery between the start of CPC and the third program year (2015) had few statistically significant associations with reductions in hospitalizations, ED visits, expenditures, and other outcomes over the same time period.**
  - Practice changes were measured by a module in a survey of practices called the Modified Patient-Centered Medical Home Assessment (M-PCMH-A).
  - The findings differed substantially from those presented in the second annual evaluation report (Peikes et al. 2016), which showed strong associations between improvements in M-PCMH-A scores and improvements in outcomes between baseline and the second year of CPC (2014).
  - More nuanced theoretical and statistical models of how changes in care delivery affect key outcomes are needed and will be developed in the final year of the evaluation.

The CPC model

The CPC initiative is designed to provide financial resources, learning support, and data feedback to help practices transform across five key care delivery functions: (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 of better care, smarter spending, and healthier people, as specified in the CPC change package.[1] CPC tests this new approach to care delivery in nearly 500 primary care practices across seven regions of the United States.

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

CMS specified a series of Milestones to help move practices along the path of implementing the five functions, and it updates the requirements for each Milestone annually to build on practices' progress in the prior year (Table ES.1). CMS assesses whether practices meet targets set within the Milestones, which are considered minimum requirements to remain in the program. Although the CPC Milestones overlap with many of the activities typically included in existing patient-centered medical home (PCMH) recognition programs, CPC did not require

[1] The CPC change package (https://innovation.cms.gov/Files/x/cpcidiagram.pdf) 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.

practices to have or obtain PCMH recognition, although nearly 40 percent did have this recognition when they applied to CPC.

Table ES.1. CPC Milestones for PY2015

1.	**Budget.** Report actual CPC expenditures from PY2014. Complete an annotated annual budget with projected CPC initiative practice revenue flow for PY2015 and actual revenue/expenses from PY2014.
2.	**Care management for high-risk patients.** Continue to risk-stratify patients and expand care management activities for highest risk patients and to 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 hours a day, 7 days a week with a care team that has real-time access to the electronic medical record. Continue to implement asynchronous forms of communication (for example, patient portal, email) and ensure timely responses. Measure visit continuity by empaneled patients to providers in the practice.
4.	**Patient experience.** Assess patient experience through patient surveys or patient and family advisory council meetings and communicate to patients (using electronic, poster, pamphlet, or similar communication methods) about resulting changes the practice is making.
5.	**Quality improvement.** Continue to perform continuous quality improvement using electronic health record (EHR)-based clinical quality measures (eCQMs) on at least three of the nine measures that practices report annually. Review at least one payer data feedback report (CMS Practice Feedback Report or other payers' reports) to identify a high-cost area and a practice strategy to reduce cost in this area while maintaining or improving quality.
6.	**Care coordination across the medical neighborhood.** Track patients by implementing two of three options: follow up via telephone with patients within one week of ED visits; 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.** Use at least three decision aids to support shared decision making for three preference-sensitive conditions and track patient eligibility for and use of the aids.
8.	**Participating in learning collaborative.** Participate in regional and national learning offerings, participate in at least one of the advance primary care action groups,[2] and communicate with regional learning faculty.
9.	**Health information technology.** Attest that each eligible professional in the practice is engaged with and working toward attestation for Stage II Meaningful Use (MU) in the timelines set by the MU program.

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.

Detailed overview of findings

In the remainder of this executive summary, we provide a more detailed overview of findings from the third annual report.

[2] The advanced action groups covered behavioral health integration, self-management support, and medication management.

ES.1. Participation remained relatively stable in 2015 (Chapter 2)

Payer participation. CMS and 36 of the original 39 other participating payers (which include private health plans in all CPC regions and state Medicaid agencies in five regions) are working together to make a substantial investment of public and private resources to redesign primary care in CPC's seven regions.[3,4] Payer participation has remained steady, with only a few small payers leaving CPC or merging with another participating payer during CPC's first three program years (Table ES.2). 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 2015.

Table ES.2. Number of CPC participants at the start of the initiative and the end of PY2013, PY2014, and PY2015

CPC participant	Start of CPC initiative (Fall 2012)	End of PY2013 (Dec 2013)	End of PY2014 (Dec 2014)	End of PY2015 (Dec 2015)
Regions	7	7	7	7
Payers[a]	39	37	37	36
Practices	502	492	479	445
Clinicians	2,172	2,158	2,200	2,135
Attributed Medicare FFS patients[b]	313,950	326,100	337,617	329,270
Attributed patients of other participating payers[c]	Not known	887,846	807,734	824,081
Other, nonattributed patients served by practices[c]	Not known	1,330,326	1,655,617	1,692,744
Total patients served by practices (attributed plus nonattributed)	Not known	2,544,272	2,800,968	2,846,095

[a] Reflects participating payers other than Medicare FFS. Payers participating in more than one region are counted for each region in which they participate.

[b] Source: ARC provides lists of attributed Medicare beneficiaries each quarter; we de-duplicated these lists 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, PY2014, and PY2015 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 analyzed the budget data for PY2013, and Bland & Associates analyzed these data for PY2014 and PY2015; 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.

[3] Payers participating in more than one region are counted separately for each region in which they participate. There are 28 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, because MVP acquired Hudson Health Plan in September 2013, we now count these entities as one payer.

[4] 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 a Medicaid participating payer, although it is not providing care management fees to participating practices.

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 2015, 13 of the 27 payers with self-insured clients included all or most of their self-insured lives in CPC, 6 payers included some, and 8 included none.

Practice participation. Practice participation has remained relatively stable in the initiative's first three years, with 10.2 percent of the 502 practices that CMS selected to participate in CPC withdrawing and another 1.6 percent having been terminated from the initiative. While the rate of practice withdrawals has been low, 30 of the 51 withdrawals that occurred during CPC's first three program years came during the last quarter of PY2015. Most of the 34 practices that left CPC in 2015 voluntarily withdrew to join Medicare ACOs (23 practices) or due to challenges meeting CPC requirements (6 practices).[5] In addition, CMS terminated four practices for failure to comply with CMS terms and conditions in 2015, and one practice closed. As of December 31, 2015 (the end of the third program year), after withdrawals, terminations, and practice splits, 445 practices with 2,135 clinicians were still participating in CPC.

Patient participation. 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 three program years, the number of both total and attributed patients was substantial. The total number of patients at the end of 2015 was estimated at more than 2.8 million across all participating practices, and 329,270 of these patients were attributed Medicare FFS patients.

ES.2. CPC delivers substantial financial support, data feedback, and learning supports to practices (Chapter 3)

To help participating practices change care delivery and accomplish CPC's goals, the initiative provides financial support, data feedback, and learning support to participating practices. In its third year, CPC's participating payers continued to provide substantial nonvisit-based care management fees paid in addition to traditional payments, for those patients attributed to CPC practices.[6] Many practices considered CPC's data feedback useful, but some found it challenging to understand how to use it in their improvement efforts. Many practices also considered learning support important. In-person learning sessions were valued highly, because they offered practices an opportunity to network with other practices and to learn from the experiences of their peers. Practices that received individualized coaching from the regional learning faculty (RLF), highly valued that support, which was tailored to practices' specific questions and challenges.

[5] Practices could not participate in both CPC and the Medicare Shared Savings Program (MSSP) or other Medicare ACO models. In contrast, CMS will allow practices to participate in both MSSP and CPC Plus (CPC+), which will begin in January 2017.

[6] Medicare FFS beneficiaries were attributed quarterly to CPC practices that delivered the plurality (that is, most) of their primary care visits during a two-year look-back period. Other payers used their own attribution methodologies.

Financial supports. Medicare FFS and most other payers used per member per month (PMPM) payments for their enhanced CPC payments to practices.[7] As planned since the start of the initiative, Medicare FFS reduced the average care management fee it paid CPC practices from $20 to $15 per beneficiary per month (PBPM) beginning in January 2015. Unlike Medicare FFS, 73 percent of other payers did not reduce their PMPM payments. Across payers, practices reported a median decrease in CPC funding of 15 percent from PY2014 to PY2015.[8]

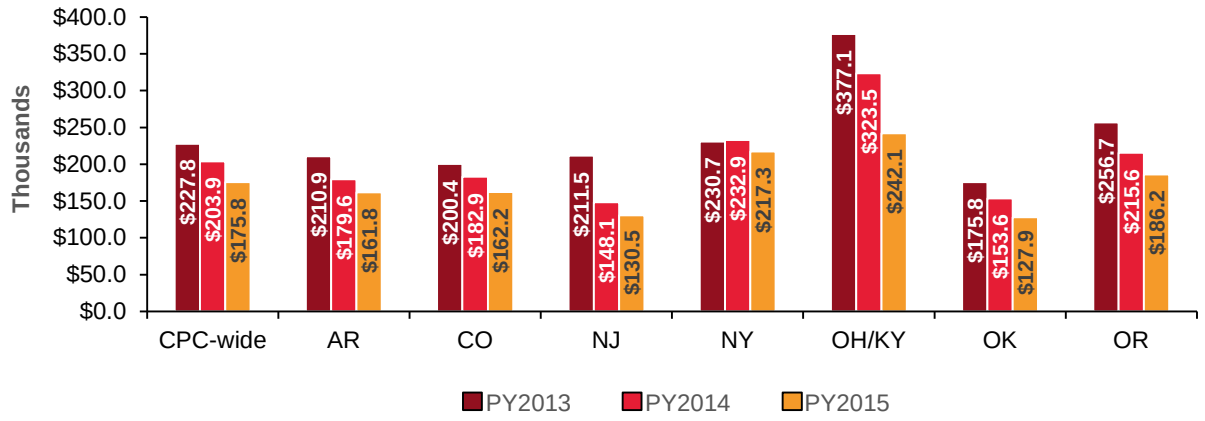
Despite this decrease, CPC practices continued to report receiving sizable care management fees from CMS and other participating payers in PY2015, in addition to their usual revenues. Across payers, practices received a median of $8.02 per attributed patient per month, or $3.27 per active patient per month. This finding translated to a median of $175,775 per practice ($51,286 per clinician) over the course of PY2015, which averaged 12.5 percent of 2015 total practice revenue for CPC practices (Figures ES.2 and ES.3). In part due to the decrease in PMPM payments from some payers in January 2015, the median payments to practices for PY2015 were lower than the median payments in PY2014 ($203,949 per practice; $64,142 per clinician) and PY2013 ($227,849 per practice; $70,045 per clinician).[9]

[7] One regional payer uses an at-risk capitation model instead of providing PMPM payments.

[8] The payment statistics we present in this section are based on an analysis of the PY2014 and PY2015 budget data by Bland and Associates. The methods used to calculate these statistics may differ slightly from those used by Mathematica to calculate the PY2013 statistics.

[9] Medicare FFS payments in PY2013 were higher than in PY2014, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

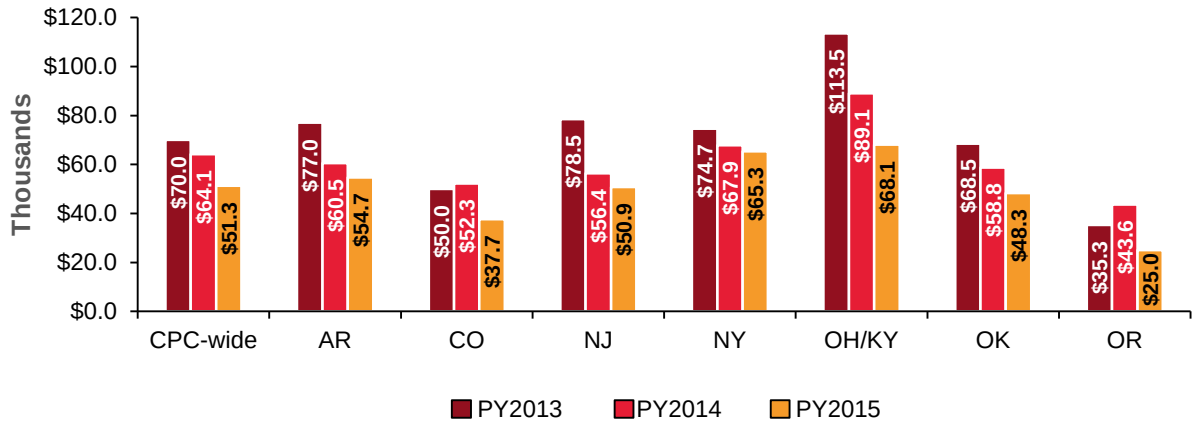
Figure ES.2. Median CPC funding per practice, CPC-wide and by region, for PY2013, PY2014, and PY2015



Source: Mathematica analysis of PY2013 budget data. Bland and Associates analysis of PY2014 and PY2015 budget data.

Note: This analysis is based on practice-reported data. Reported differences between years should be interpreted with caution, given slight differences in the methods underlying the calculation of these statistics. Medicare FFS payments in PY2013 were higher than in PY2014 and PY2015, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

Figure ES.3. Median CPC funding per clinician, CPC-wide and by region, for PY2013, PY2014, and PY2015



Source: Mathematica analysis of PY2013 budget data. Bland and Associates analysis of PY2014 and PY2015 budget data.

Note: This analysis is based on practice-reported data. Reported differences between years should be interpreted with caution, given slight differences in the methods underlying the calculation of these statistics. Medicare FFS payments in PY2013 were higher than in PY2014 and PY2015, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

Medicare and about two-thirds of other participating payers are also providing practices the opportunity to share in any savings accrued during each of the last three years of the initiative. CMS's shared savings calculations serve a different purpose than the evaluation and, as such, use a different approach. For shared savings, CMS compares CPC attributed beneficiaries' actual expenditures to an actuarial target spending level based on baseline spending of a reference population of other beneficiaries in the region, trended forward from 2012 to the performance year.[10]

CMS announced the results of its shared savings calculations for PY2015 performance in October 2016. CMS found that CPC generated savings for PY2015 in four regions—Arkansas, Colorado, Oklahoma, and Oregon. Across these regions, CMS paid CPC practices more than $13.1 million in shared savings payments. (This is considerably larger than the PY2014 Medicare shared savings of $658,129 that CMS paid to practices in Oklahoma, the only region that realized net savings for that performance year.) In contrast, CMS found that New York, New Jersey, and Ohio/Kentucky increased actual expenditures relative to expected expenditures in 2015. Unlike the shared savings calculations, the evaluation results indicate that, in 2015, none of the regions generated statistically significant net savings, and Ohio/Kentucky increased costs, after accounting for the care management fees.

At the time of our summer 2016 interviews, only a few non-Medicare payers had completed their shared savings calculations for PY2015. However, among the eighteen non-CMS payers that reported results for PY2014 performance, two payers each in Colorado, Ohio, and Oklahoma/Kentucky, as well as one payer each in Arkansas and Oregon, found CPC to generate savings in PY2014 for at least one line of business or group of practices.

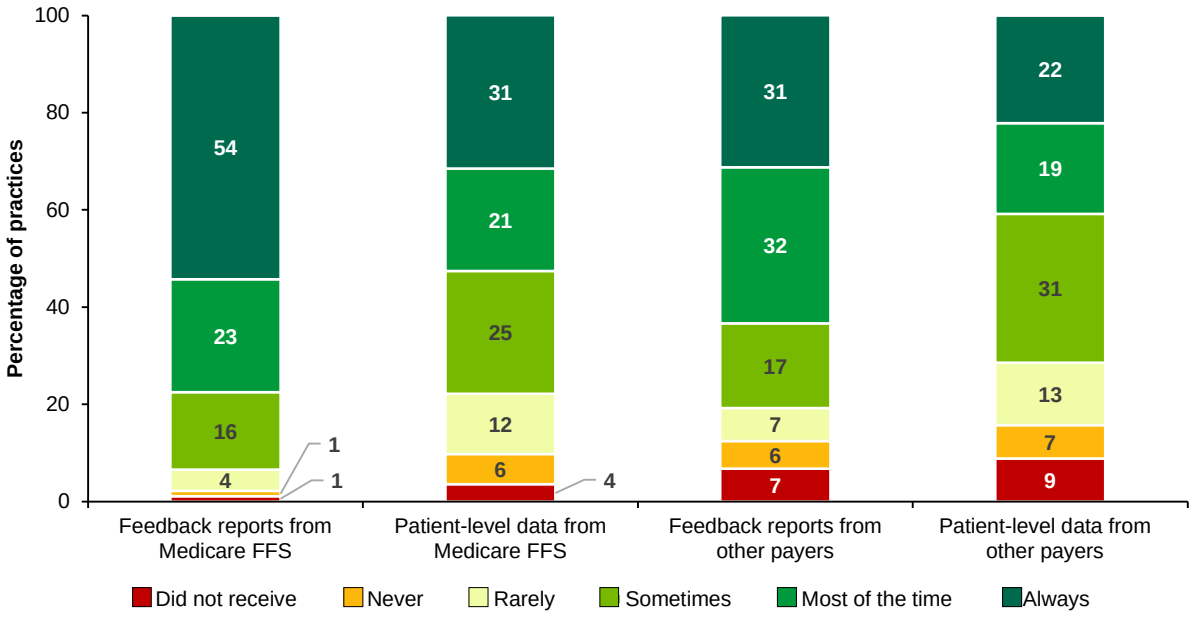
Data feedback. In PY2015, CPC practices received practice-level feedback from Medicare FFS and about 90 percent of other participating payers, and they received patient-level data files from Medicare FFS and more than half of other payers. In PY2015, most payers started providing new or additional forms of feedback to practices, improved existing reports, or took steps to further align the contents and timing of feedback across payers. Most notably, payers in Colorado, Ohio/Kentucky, and Oklahoma spent considerable time and resources developing a data aggregation approach—an important step in regions where practices were receiving different reports from multiple payers. All three regions selected a vendor to aggregate the data, established a governance structure, and determined the initial content of the unified report. Payers in Colorado and Oklahoma released aggregated reports in PY2015; Ohio/Kentucky released its first aggregated report in January 2016.

In the spring 2015 practice survey, a sizable proportion of practices reported reviewing practice-level reports from CMS on its Medicare FFS patients (77 percent) and other payers' reports on their patients (63 percent) all or most of the time (Figure ES.4). A smaller proportion

[10] CMS's contractor, Actuarial Research Corporation (ARC), calculates shared savings for CPC. The methodology used to calculate shared savings differs substantially from the methodology Mathematica uses for its evaluation of the initiative's impacts on Medicare expenditures. In particular, ARC's methodology is not based on the matched set of comparison practices used in Mathematica's evaluation but instead uses regional targets based on baseline 2012 expenditures of a reference population of eligible Medicare FFS beneficiaries in the region that are not attributed to CPC practices, trended forward. For more information on CPC's shared savings methodology, see https://innovation.cms.gov/Files/x/Comprehensive-Primary-Care-Initiative-Shared-Savings-Methodology-PDF.pdf.

of practices reported reviewing patient-level data files: 53 percent of practices reviewed Medicare FFS patient-level data files, and 41 percent reviewed other payers' patient-level data files all or most of the time.

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



Source: CPC practice survey, administered April through August 2015.

Note: A response of "did not receive" could mean either that the report or data file was not available or that the respondent was unaware of it. 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.

FFS = fee for service.

Some practice members in the 21 practices selected for intensive study—which we refer to as "deep-dive" practices—as well as RLF identified several limitations to using payers' feedback to drive quality improvement, including some practices receiving reports from payers with small numbers of patients represented, the time lag for claims included in the reports, and the perception that some outcomes were outside of their control and improvements instead depended on patients, specialists, or hospitals.[11] Practices that successfully used the reports did so to guide practice-level improvements and identify some specific high-utilizing patients, but did not rely on the reports to guide individual interactions with patients.

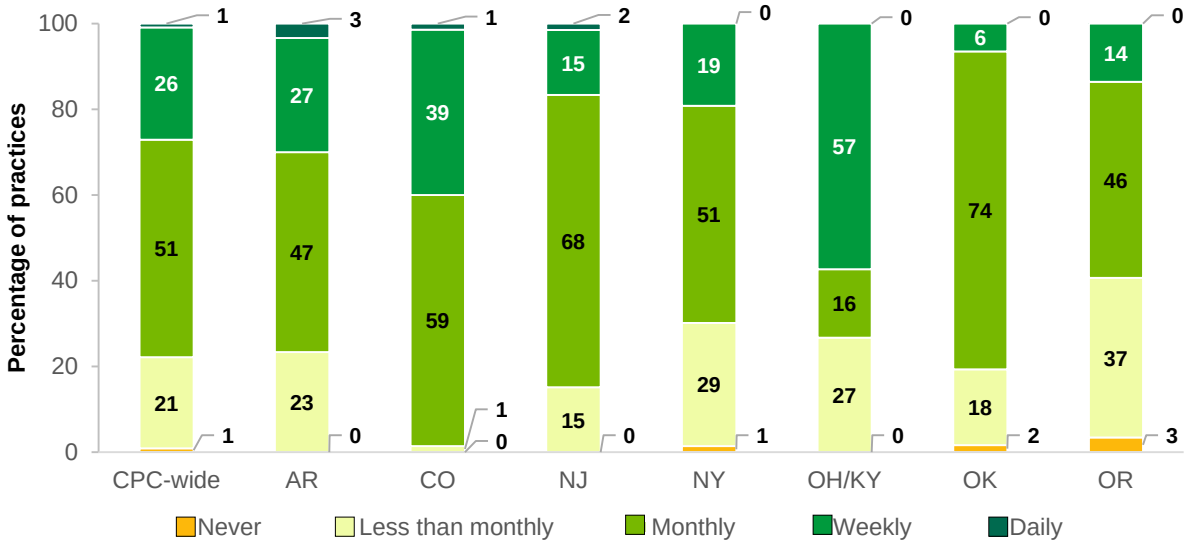
Learning support. CMS and its contractors facilitated practice transformation and provided opportunities for peer-to-peer learning through a range of learning supports in PY2015, including regional webinars and all-day in person meetings and cross-regional learning groups. RLF also

[11] We conducted in-depth interviews with clinicians and staff at these same 21 deep-dive practices (three per CPC region) in 2013, 2014, and 2015.

provided individualized practice coaching to a subset of practices. RLF selected practices to receive this coaching and adjusted its intensity depending on practices' progress toward meeting CPC Milestones and their performance on quarterly Medicare feedback reports. Additionally, CMS transitioned to a new online knowledge management and collaboration tool in 2015 (CPC Connect) from the website that had been used since the beginning of the initiative (the collaboration site). CPC Connect promotes more peer sharing and learning than the collaboration site. Some practices also received supplemental support from payers or other stakeholders in their region.

Most CPC practices regularly participated in learning activities. In the spring 2015 practice survey, 78 percent of practices reported at least monthly interactions with RLF, ranging from 59 percent in Oregon to more than 95 percent in Colorado (Figure ES.5). Additionally, 72 percent of practices rate their RLF as excellent or very good in meeting their CPC-related needs (Figure ES.6). Deep-dive practices valued in-person learning sessions more than other group learning sessions, indicating that these sessions permitted the opportunity to network with other practices and to learn from the experiences of their peers. They found web-based learning activities were most helpful when they focused on topics and resources that could easily be applied to day-to-day work, a model used by the rapid-cycle action groups introduced in September 2015. Deep-dive practices that received individualized coaching from the RLF highly valued the support tailored to their specific questions and challenges.

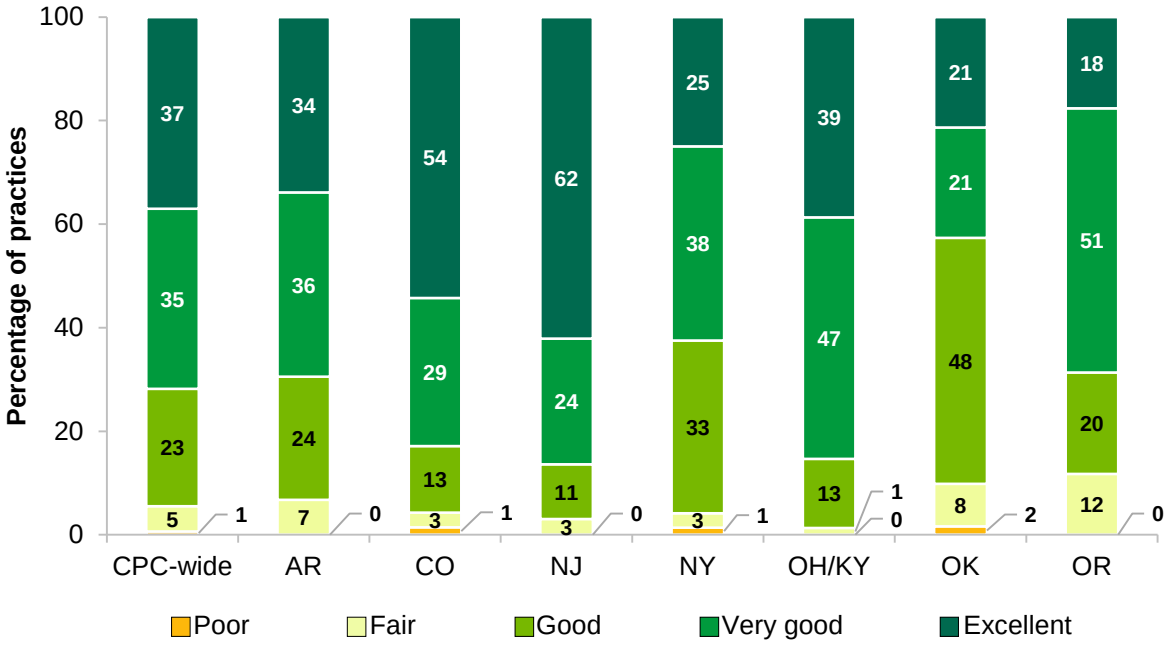
Figure ES.5. Frequency of reported communication with RLF in previous six months, by region



Source: CPC practice survey, administered between April and August 2015.

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

Figure ES.6. Percentage of practices rating their RLF as excellent, very good, good, fair, or poor in meeting their CPC-related needs, in 2015



Source: CPC practice surveys administered from April through August 2015.

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 most New Jersey practices. (After mid-May 2015, TransforMED no longer provided learning support in the region.)

RLF = regional learning faculty.

ES.3. CPC collaborations of participating payers, practices, and other stakeholders remained key in 2015 (Chapter 4)

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. As a result of their work together, payers accomplished several collaborative outcomes including aligning quality goals and financial incentives, agreeing on a common set of quality measures, coordinating common approaches to data feedback, and coordinating CPC with other regional efforts.

In PY2015, multistakeholder meetings, which involve CPC payers, selected practices, and, in some cases, other stakeholders (for example, employers, health foundations, or universities), became the primary forum for discussing CPC. In all but two regions, these meetings have largely replaced regular meetings of only payers, referred to as multipayer meetings. Payers value the opportunity to discuss CPC with practices during multistakeholder meetings. However, in most regions, payers indicated practice engagement in these meetings remains low and the meetings could be improved by outlining a clearer vision and concrete roles for stakeholders.

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

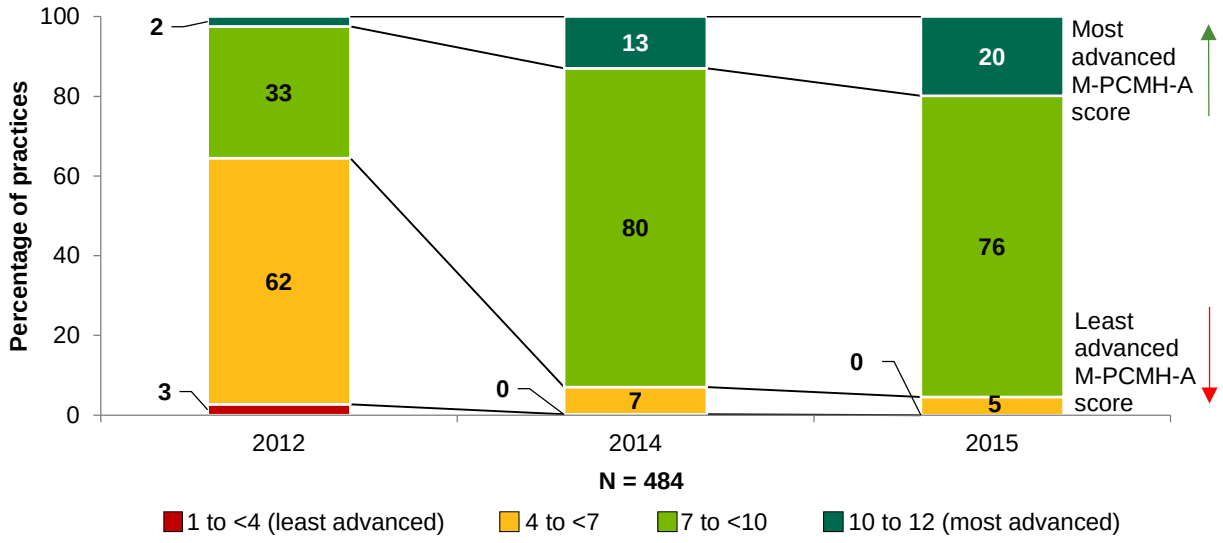
additional financial and technical support to each region. CMS has improved its relationship with most CPC payers, in part by (1) clearly delineating what aspects of the initiative are flexible and subject to change based on payer input and what aspects must be standardized across all regions, and (2) deferring to the other payers on region-specific collaborative discussions (such as selecting a data aggregation vendor).

ES.4. CPC is changing how participating practices deliver care (Chapter 5)

Practices continue to work to transform care delivery. Across the CPC 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, initial care processes, and workflows. In PY2014, they made meaningful progress in each of the CPC Milestones, demonstrating that CPC practices were indeed changing care delivery. In PY2015, practices continued to refine their care processes and workflows for the Milestones. Findings across data sources from 2012 to 2015 indicate that CPC practices improved most in their work on risk-stratified care management, access to care, and continuity of care. However, practices face challenges in implementing some of the Milestones and there continues to be room for improvement in the final year of CPC.

- Between 2012 and 2015, 95 percent of CPC practices improved their approaches to primary care delivery, as self-reported on an annual survey of practices (Figure ES.7). We collected practice's self-reported approaches to care delivery using 37 questions contained in multiple rounds of the M-PCMH-A survey module. We used these questions to produce an overall summary score; each question and the summary score uses a scale of 1 (least advanced approach) to 12 (most advanced approach). The proportion of CPC practices with summary scores indicating the highest performance category (between 10 and 12), grew from 2 percent in 2012 to 13 percent in 2014 and to 20 percent in 2015. The proportion of CPC practices with summary scores in the second highest performance category (between 7 and 10) increased dramatically between 2012 and 2014, from 33 to 80 percent, and fell slightly in 2015 to 76 percent as more practices moved into the highest performance category in 2015. By 2015, no CPC practices were in the least advanced category (1 to 4), and about 5 percent reported responses indicating that they were slightly more advanced (4 to 7).

Figure ES.7. Distribution of modified PCMH-A survey score for approaches to care delivery for CPC practices, 2012 to 2015



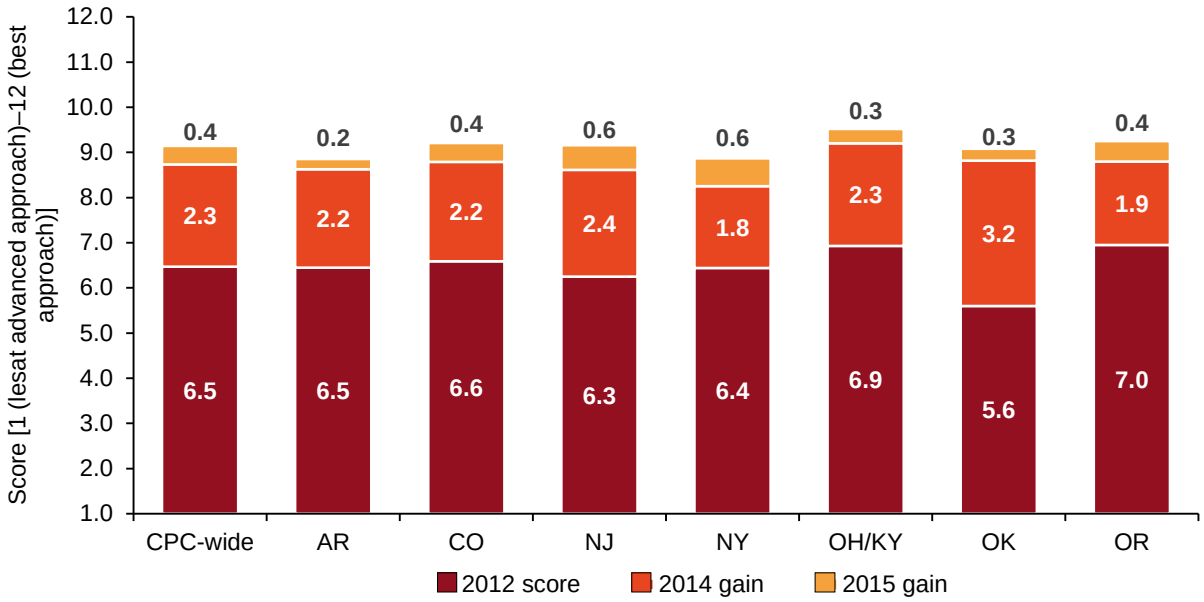
Source: Mathematica analysis of the 2012, 2014, and 2015 CPC practice surveys administered October through December 2012, April through July 2014, and April through August 2015, respectively.

Note: The overall score is based on the practice's self-reported approaches to care delivery using 37 questions contained in the modified Patient-Centered Medical Home Assessment (M-PCMH-A). Each question and the summary score uses a scale of 1 (least advanced approach) to 12 (most advanced approach).

- CPC practices' self-reported approaches to delivering primary care indicated improvement CPC-wide and in each region during the first three years of CPC, although the amount of improvement between 2014 and 2015 was much smaller than the improvement between 2012 and 2014 (Figure ES.8).[12]

[12] 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 may also raise the standards of some practices, leading to lower ratings of the same approaches over time for some practices.

Figure ES.8. CPC practices' mean 2012 overall modified PCMH-A score, with 2014 and 2015 gains, CPC-wide and by region

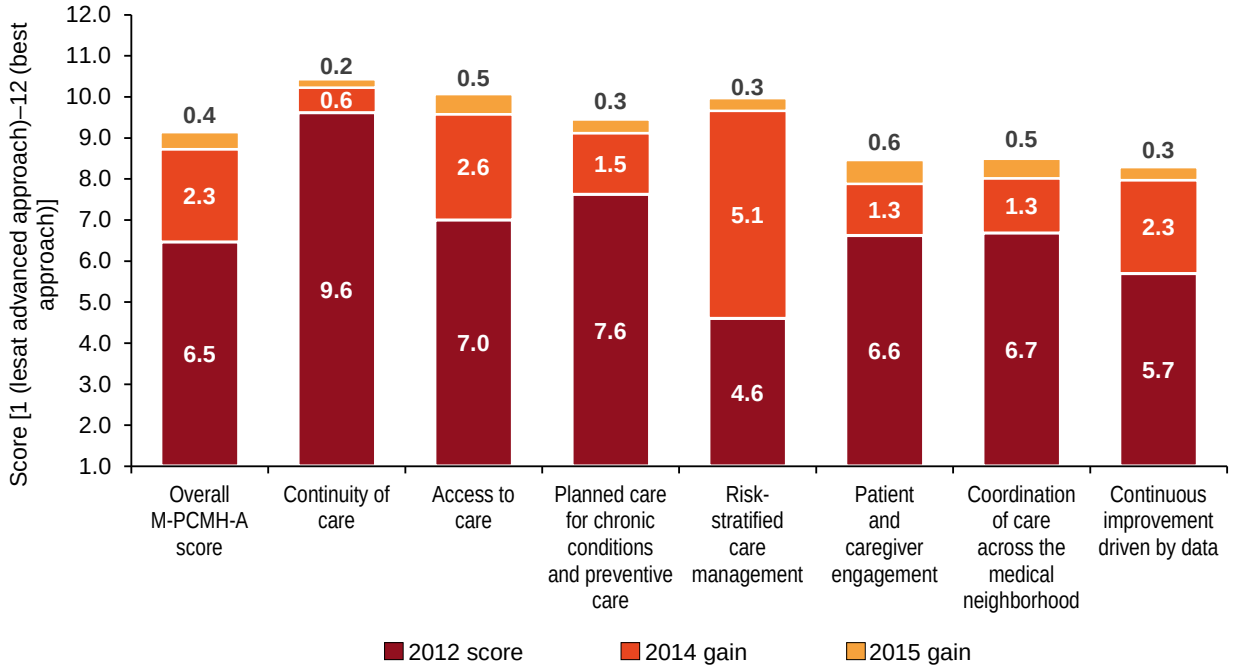


Source: Mathematica analysis of the 2012, 2014, and 2015 CPC practice surveys administered October through December 2012, April through July 2014, and April through August 2015, respectively.

Notes: The summary score uses a scale of 1 (least advanced approach) to 12 (most advanced approach).

- By 2015, practices' self-reported approaches to care delivery in the seven domains in the practice survey indicated that they had relatively high scores for three areas (risk-stratified care management, access to care, and continuity of care), suggesting that practices were using fairly advanced approaches to care for these domains (Figure ES.9). Scores for the other four areas (planned care for chronic conditions and preventive care, patient and caregiver engagement, coordination of care across the medical neighborhood, and continuous improvement driven by data) were not as high, and there remains room for growth in all seven domains. (Although the seven domains measured in the practice survey 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 in transforming care.)

Figure ES.9. CPC practices' mean 2012 modified PCMH-A scores, with 2014 and 2015 gains, for the seven domains and overall



Source: Mathematica analysis of the 2012, 2014, and 2015 CPC practice surveys administered from October through December 2012, April through July 2014, and April through August 2015, respectively.

Notes: Each domain uses a scale of 1 (least advanced approach) to 12 (most advanced approach).

- The size of improvements in care delivery reported on the practice survey generally were not correlated with practice characteristics (practice size, practice ownership, or how clinicians were compensated) nor with CPC funding per clinician.

- CPC appears to have helped some practices improve their approaches to care delivery more than others between 2012 and 2015. Specifically, four types of practices showed the most improvement: (1) practices with lower scores on the M-PCMH-A at baseline, (2) practices that were not a recognized PCMH before CPC, (3) practices that were rated in the bottom two-thirds of CMS scores for their application to participate in CPC, and (4) practices that reported using data reports from their EHR to guide quality improvement. All four groups had lower average scores in 2012 than CPC practices overall; therefore, the larger increases over time may reflect these practices having more room for improvement.

- All data sources examined demonstrate that the area of greatest transformation for CPC practices is risk-stratified care management (Milestone 2). The Milestone and the deep-dive data indicate that CPC practices used multiple sources of information and iterative processes to risk-stratify patients. During PY2015, some practices refined their approaches to risk stratification, for example, by including or expanding consideration of patients' family support and social needs when determining a patient's risk score. Care managers, who are predominantly nurses, tended to focus on patient education, coaching, and monitoring for

chronic conditions, management of care transitions, post-discharge contact, and care plan development.

- There is still room for improvement in the delivery of risk-stratified care management in CPC practices. For example, while care managers are increasingly becoming part of CPC practices' interprofessional teams, members from several practices continued to describe confusion among clinicians, staff, and in some cases the care manager, over the responsibilities of this role. Care managers in several practices also noted the challenge of establishing relationships with patients and engaging them in behavior modification. Finally, several practices described challenges with documenting care management encounters and care plans in the EHR given current EHR capabilities. Looking forward, practices will need support in using care plans for patients with complex needs.

- To improve access and continuity (Milestone 3), practices continued to register patients on their portals, in part because Stage 2 Meaningful Use incentives also emphasized patient portals.[13] Most practices offered patient portals for messaging and other activities, but practice staff continued to report that older patients' lack of comfort with technology, technical glitches, and a lack of practice resources posed challenges to getting patients to enroll in and use portals. Because Meaningful Use emphasizes portals, other options for enhanced access (as measured by the Milestone data) may have received less attention from practices. Deep-dive and survey data, however, indicate that practices continued to improve wait times for patient appointments, telephone access to the practice for patients, and after-hours access to clinicians via email, telephone, or in person. In terms of continuity, practices need to continue to build the relationship between the patient and the care team.

- In PY2015, to improve patient experience (Milestone 4), practices continued to conduct patient surveys, convene patient and family advisory councils (PFACs), or pursue a combination of these strategies to gather feedback and make changes in response to that feedback. An increasing percentage of practices feel that patient feedback from surveys and/or PFACs is "very important" to improving the care they provide to patients. Milestone data indicate that surveys continued to be the most common method used for eliciting patient feedback; however, use of PFACs rose from 20 percent in 2013 to 42 percent in 2014 to 47 percent in 2015. In 2015, a few more deep-dive practices started PFACs, and those using PFACs noted that feedback from these councils was more useful for guiding changes than data from patient surveys, because they permitted more nuanced discussion of patients' concerns and experiences. As a result of this Milestone work, practices made improvements to scheduling, office hours, appointment types, the number of front-office staff, waiting areas, and continuity of care between patients and clinicians. Nonetheless, challenges remain gathering patient feedback including perceived survey fatigue among patients, recruiting a diverse group of patients for PFACs, and scheduling PFAC meetings during times convenient for both practice members and patients. Interviews with deep-dive practices

[13] A patient portal is a secure online website that gives patients 24-hour access to personal health information from anywhere with an Internet connection. Using a secure username and password, patients can view health information such as recent doctor visits, discharge summaries, and medications.

suggest that there is also more room for practices to share with their patients the findings and improvements they are making based on feedback from patient surveys and PFACs.

- Findings from the practice survey suggest CPC practices have increased their focus on quality improvement (Milestone 5). Several of the 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. Deep-dive respondents often noted that the reporting requirements for this Milestone, specifically regarding development of consistent data documentation in the EHR and processes for reporting eCQMs, were time-consuming and resource-intensive. Some practices face challenges making data-driven improvement a part of their cultures.

- Practices that reported using data reports from their EHR to guide quality improvement increased their primary care functioning, as measured by the practice survey, from baseline to 2014 and 2015, more than practices that did not report using data reports from their EHR. This finding may indicate the importance of this work or that high-functioning practices have more capacity to focus on QI and EHR data.

- Deep-dive practices identified several challenges to using payers' feedback reports to guide quality improvement, including having inconsistent access to patient-level data, receiving reports that represent small numbers of patients, and receiving reports that were not aligned across payers in measurement methodologies and reported outcomes. Deep-dive practices that were part of large systems often received PDF files created by their system that were a tailored summary of their practices' data from the Medicare quarterly feedback reports. In some of these practices, practice respondents indicated they did not receive patient-level data (even though Medicare and some other payers send it to practices or otherwise provide access to it). Some smaller, independent practices lacked the time and resources to access and analyze the feedback data.

- CPC practices made progress from 2012 to 2015 on the care coordination tasks of follow-up after ED visits and hospital discharges (Milestone 6), as measured by the Milestone data and the practice survey. In the practice survey, the proportion of CPC practices that reported having arrangements in place with hospitals and EDs to track these patients' discharges increased from 26 to 64 to 74 percent from 2012 to 2014 to 2015, respectively. Findings from the deep-dive interviews also indicated that many practices refined workflows (to "pull" data from hospitals), and some entered into agreements with the hospitals to which they most frequently admitted patients to obtain discharge data, so practices could contact hospitalized patients promptly. However, there is still room for improvement, particularly in getting hospitals to "push" patient discharge data to practices.

- Deep-dive practices feel that their activities for risk-stratified care management (Milestone 2), 24/7 access and continuity (Milestone 3), and care coordination across the medical neighborhood (Milestone 6) are helping to reduce ED visits. They cite four activities that they believe are helping to reduce ED visits: (1) care managers identifying frequent ED users and phoning them regularly to address their concerns; (2) care managers calling high-risk patients between visits to identify and prevent exacerbations in chronic conditions; (3)

practice clinicians, care managers, and staff emphasizing to patients the importance of calling the practice rather than going to the ED for nonurgent care; and (4) the practice improving practice accessibility, so that patients can see a clinician quickly.

- Rates of use of care compacts (also called care coordination agreements) with specialists continues to be low in 2015. Like practices nationwide, CPC practices have substantial opportunities to improve how they coordinate and exchange information with specialists.

- CPC practices are making slow progress in implementing shared decision making (Milestone 7). There continues to be room for improvement in this area in (1) providers and staff understanding what a preference-sensitive condition is, (2) development of care processes to provide shared decision making without overwhelming clinicians, and (3) refining the ability to track shared decision making in EHRs. Deep-dive practices that used teamwork to engage patients in shared decision making found Milestone 7 more manageable, but this approach also posed risks of potentially inappropriate distribution of decision aids if the workflows were not carefully thought out.

- To fulfill the participation requirements for CPC learning activities (Milestone 8), practices participated in full-day in-person regional learning sessions, attended webinars, and participated in at least one action group or affinity group (a smaller group designed to foster increased peer-to-peer sharing and rapid testing of small changes to practice care delivery). They also contributed to the CPC Connect, and engaged with the RLF to support the practices' transformation efforts. In assessments by RLF, most practices met Milestone 8 requirements for participating in CPC learning activities. (Section ES.2 describes the regional and national learning activities offered in PY2015 and CPC practice perspectives on the learning supports.)

- As required by CPC, practices are using EHRs certified by the Office of the National Coordinator for Health Information Technology, and 99 percent of CPC practices attested that their eligible providers (EPs) are currently working toward meeting the Stage 2 requirements for Meaningful Use (Milestone 9: Health information technology). However, triangulation of data from Milestone reporting, practice survey, and the deep-dive practices demonstrates that practices face challenges obtaining and exchanging timely data from providers outside their practice or system. These challenges pose barriers to improving follow-up care after ED visits and hospitalizations and to coordinating care for patients after their visits to specialists.

- As in PY2014, the deep-dive practices that used team-based approaches to workflows found CPC Milestone implementation more manageable in PY2015. Clear role delegation and open communication helped support teamwork, particularly for Milestones 2 (Risk-stratified care management), 5 (Quality improvement), 6 (Care coordination across the medical neighborhood), and 7 (Shared decision making). Spreading the work across a variety of staff in the practice decreased the burden on any one staff member and made staff feel they were working together toward improvement goals. It continues to be challenging to motivate all clinicians and staff in a CPC practice to support the workflow and EHR documentation changes needed to implement the Milestones, although deep-dive data suggest that this situation improved somewhat in 2015 as practices spent more time reinforcing the

importance of this work with their clinicians. Larger practices in which only a lead clinician or a few clinicians and staff members were implementing the work of CPC reported more difficulty implementing the Milestones.

Practices continued to face implementation challenges in 2015 across several Milestones. Continued challenges in the third year are not surprising, because the initiative requires extensive care delivery changes on many fronts. Practices' experiences with these challenges can inform both support for work in the final year of CPC and future primary care initiatives:

- In 2015, most deep-dive practices continued to report that meeting the requirements of all nine Milestones plus the reporting requirements was overwhelming and they would have preferred to focus on fewer Milestones. Practices continued to report in 2015 that risk-stratified care management (Milestone 2) and timely follow-up after hospital discharge and ED visits (Milestone 6) are the most clinically relevant to improving patient care.

- Although CPC funding is substantial, particularly for large practices and systems with multiple practices in CPC (which may benefit from economies of scale), it continued to be challenging in 2015 for some small practices to support full-time care managers with CPC funds alone. Several deep-dive practices also continued to cite additional funding needs, beyond CPC resources, which would allow them to hire or consult with health IT experts to support CPC documentation processes and reporting.

- As in prior years, system-affiliated deep-dive practices tended to have more resources for enhanced care delivery than small independent practices (including, in some cases, access to behavioral health providers, pharmacists, and health IT support), but system-owned practices tended to face more administrative hurdles because systems often want to roll out processes similarly across all their CPC practices. This factor made it harder for system-owned CPC practices to be nimble in adapting their local workflows for some aspects of CPC implementation.

- In general, current limitations in EHR functionalities resulted in inadequate support for deep-dive practices to efficiently report eCQMs or to create and modify dynamic care plans that can be adapted as patient needs change (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.

- Although CPC practices have improved their approaches to care delivery, they are performing at only slightly more advanced levels than comparison practices (based on data from the practice survey in 2015) in most areas. The area with the biggest difference between CPC and comparison practices was risk-stratified care management, a key focus of CPC. The improvements in primary care functioning in comparison practices over time may reflect these practices facing some of the same pressures and incentives to improve care delivery as CPC practices.

- Practice change is difficult to achieve, even when CPC practices are receiving strong financial and other supports, and it takes time for those changes to influence patient outcomes and health care expenditures. The challenges to practice change are numerous, including limited bandwidth to fully engage in addressing multiple Milestones simultaneously, inadequate support for robust care management and health IT implementation in smaller independent practices, inadequate ability of current EHRs to support some of the Milestone activities, and many layers of management in larger system-owned practices. 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. Even with change in primary care practice delivery, the other providers (specialists and hospitals) treating the same patients often do not share the same incentives to coordinate care and face volume-based productivity incentives. Overcoming these challenges to modify workflows and system supports consistently across providers requires ongoing time, resources, and effort not just from CPC practices and their large health systems, but also from specialists and hospitals outside of the CPC initiative.

ES.5. CPC improved patient experience slightly, but impacts were small and scattered (Chapter 6)

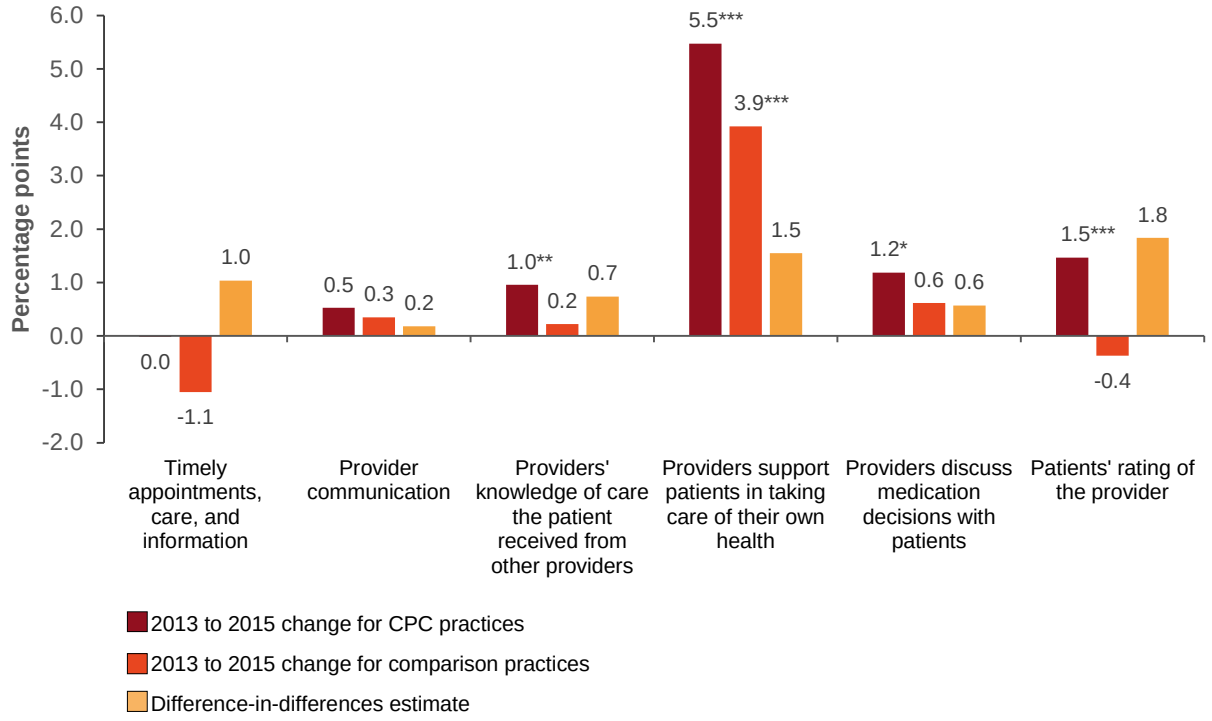
Patient-centeredness is a core tenet underlying the CPC initiative, and several aspects of CPC aim to improve patient experience through transformation of care delivery. Specifically, practices are expected to improve access to care, engage patients to guide quality improvement through regular patient surveys and/or a PFAC, integrate culturally competent self-management support and shared decision-making tools into usual care, and coordinate care across the medical neighborhood. Practices are encouraged, although not required, to use a personalized plan of care for high-risk patients. In addition, CPC uses patient experience as an element in determining eligibility for shared savings payments.

We analyzed patient experience data reported by a sample of Medicare FFS beneficiaries attributed to CPC and comparison practices over the first three years of CPC. We used a patient survey based on the Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CAHPS PCMH), which asks respondents to rate their experiences with care over the past 12 months. We collected the data in three rounds, from June through October in 2013, and from July through October in 2014 and 2015. The cross-sectional sample of respondents in each round includes more than 25,000 beneficiaries in roughly 500 CPC practices and 9,000 beneficiaries in roughly 800 comparison practices.

All three of the small but favorable effects for CPC practices relative to comparison practices observed between 2013 and 2014 among the six CAHPS composite measures disappeared in the 2015 analysis. From 2013 to 2015, among the CPC practices alone, there were small to modest statistically significant improvements in four composite measures: (1) providers' knowledge of care the patient received from other providers (1.0 percentage point, $p = 0.015$); (2) providers support patients in taking care of their own health (5.5 percentage points, $p < 0.001$); (3) providers discuss medication decisions with patients (1.2 percentage points, $p = 0.053$); and (4) patients' rating of the provider (1.5 percentage points, $p = 0.003$) (Figure ES.10). At the same time, patients at comparison practices also reported improved experiences with care

in four of the six composite measures, although only one change over time was statistically significant. Putting together the improvements in beneficiary experience in both the CPC and comparison practices, between 2013 and 2015, there were no statistically significant effects of CPC.

Figure ES.10. Estimated changes in the proportion of patients answering with the best responses in the six CAHPS composite measures from 2013 to 2015, sample of attributed Medicare FFS beneficiaries CPC-wide



Sources: CPC patient surveys administered June through October 2013, July through October 2014, and July through October 2015.

*/**/*** Differences are statistically different from zero at the 0.10/0.05/0.01 level, respectively.

FFS = fee for service.

Looking at the 36 individual questions asked in all three rounds of the survey (19 of which were included in the six composite measures), there were slightly more effects favoring CPC over comparison practices than expected by chance, although they were small in magnitude. Patients from CPC practices reported larger improvements—although still generally small—than patients in comparison practices for 5 of the 36 questions. This finding reflects slightly more favorable differences than the two expected by chance. Most (83 percent) of the responses were comparable over time for the CPC and comparison practices.

In addition, when looking at the nine survey questions that were asked in only one or two survey rounds (rather than in all three rounds), comparing the within-year CPC-comparison differences shows small favorable differences for CPC practices in 6 of the 15 comparisons, and

a small unfavorable difference in one comparison. Five of the 6 favorable comparisons relate to follow-up with patients after ED and hospital visits—both areas of focus for CPC.

The results suggest that the CPC changes in care delivery during the first three years of the initiative did not negatively affect patient experience, and that the few improvements for CPC practices, relative to comparison practices, were small. Like practices in the comparison group, CPC practices continue to face opportunities to improve patient experience of care.

ES.6. CPC reduced ED visits but did not generate enough savings to cover CPC payments (Chapter 7)

We estimated the effects of CPC by comparing the change in outcomes from the year before CPC began to the first 36 months of CPC for attributed Medicare FFS beneficiaries in CPC practices relative to the changes for Medicare FFS beneficiaries attributed to nonexperimentally selected comparison practices. Our analysis uses matched comparison practices that had characteristics similar to CPC practices before CPC began, and nets out any remaining preexisting differences between CPC and comparison practices in outcomes before the start of the intervention.

Medicare FFS expenditures and service use. Over the first 36 months, both ED visits and hospitalizations increased by 2 percent less for Medicare FFS beneficiaries in CPC practices relative to those in comparison practices though only the estimated effect on ED visits was statistically significant. CPC did not have a statistically significant effect on total monthly Medicare expenditures with or without care management fees and had minimal effects on claims-based quality-of-care measures. The favorable effects on ED visits over the first 36 months occurred in most of the regions, with five of the seven regions showing a reduction in ED visits, and two of these regions having differences that are sizable and statistically significant. Aggregate estimates suggest a CPC-wide cumulative reduction of 8,947 outpatient ED visits over the three years. For expenditures, only Oklahoma reduced gross Medicare expenditures (that is, expenditures without care management fees) over the three years—but the difference must be interpreted with caution because it was driven by the large estimates for the first program year, before effects were expected.

Over the three years, Medicare expenditures without care management fees increased by $9 PBPM (or 1 percent) less for the CPC group relative to the comparison group ($p = 0.15$, 90 percent confidence interval [CI] -$20 to $1), when results for all seven regions are combined (Table ES.3). Estimated magnitudes of the reduction in Medicare expenditures without fees became less pronounced over time, falling from $16 in Year 1, to $10 in Year 2, to $2 in Year 3 (see Figure ES.11).

We tested many alternative specifications of the model, outcome variable, and sample, and we conducted a Bayesian analysis (in which we allowed the estimated effects on expenditures in a given region to depend in part on the CPC-wide effects) and generally found similar results. Effects did not vary systematically with any practice characteristics.

Table ES.3. Percentage impacts on Medicare FFS expenditures and key service utilization outcomes over the first three years of CPC: CPC-wide and by region (all attributed beneficiaries)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Total Medicare expenditures ($ PBPM)								
Without CPC care management fees								
Year 1	**-2%****	0%	0%	**-5%*****	-2%	*3%**	**-7%*****	-3%
Year 2	-1%	1%	-2%	**-3%***	-2%	4%	-1%	**-3%***
Year 3	0%	0%	0%	1%	**-4%****	5%	-1%	-1%
Years 1, 2, and 3 combined	-1%	0%	-1%	-2%	-3%	4%	**-3%****	-2%
With CPC care management fees								
Year 1	0%	2%	3%	**-3%***	0%	*6%****	**-4%*****	0%
Year 2	1%	*3%**	0%	-2%	0%	*7%***	1%	-1%
Year 3	1%	2%	1%	3%	-2%	*7%**	0%	1%
Years 1, 2, and 3 combined	1%	2%	1%	0%	-1%	*6%***	-1%	0%
Service utilization (annualized rate per 1,000 beneficiaries)								
Hospitalizations								
Year 1	**-2%***	1%	2%	**-5%***	**-6%****	4%	**-6%*****	**-5%***
Year 2	-2%	0%	-2%	-3%	**-6%*****	3%	0%	-4%
Year 3	-1%	-4%	2%	2%	**-5%*****	5%	0%	-2%
Years 1, 2, and 3 combined	-2%	-1%	1%	-2%	**-6%*****	4%	-2%	-4%
Outpatient ED visits								
Year 1	-1%	-1%	1%	2%	2%	2%	**-6%*****	-4%
Year 2	-1%	2%	-4%	1%	*5%**	-2%	-1%	**-5%***
Year 3	**-3%*****	1%	-1%	-3%	-3%	**-5%****	**-5%****	-4%
Years 1, 2, and 3 combined	**-2%***	1%	-1%	0%	1%	-2%	**-4%****	**-5%***
Total ED visits								
Year 1	-1%	-1%	1%	0%	-1%	2%	**-5%*****	-4%
Year 2	-1%	2%	-3%	1%	2%	-1%	-1%	**-5%***
Year 3	**-2%*****	0%	0%	-1%	**-3%****	-3%	**-3%***	-3%
Years 1, 2, and 3 combined	**-2%****	0%	-1%	0%	-1%	-1%	**-3%****	**-4%***

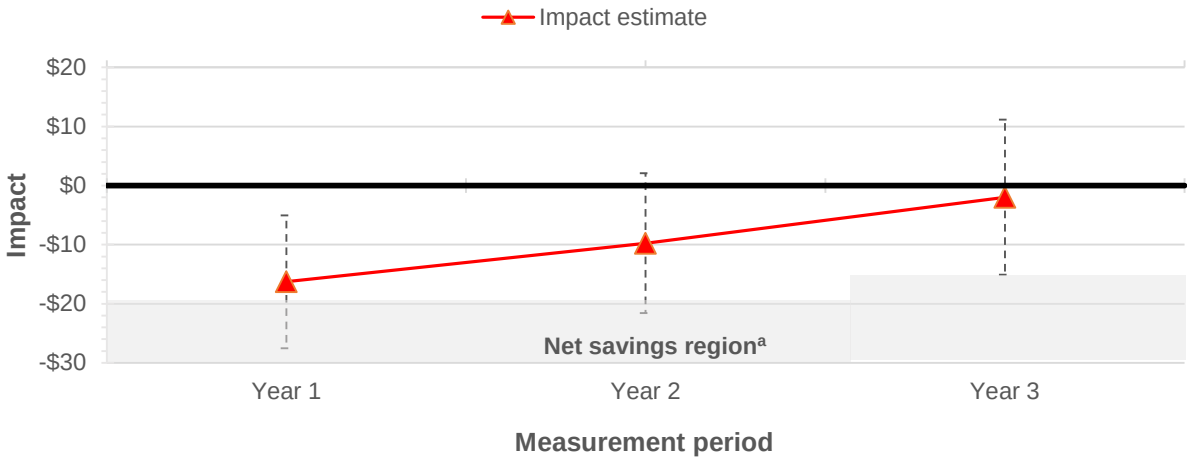
Source: Medicare claims data for the period October 2011 through September 2015.

Note: Impact estimates are based on a difference-in-differences analysis and reflect the difference in the regression-adjusted average outcomes for attributed Medicare FFS beneficiaries in CPC practices for a specific year compared with baseline relative to the same difference over time for attributed Medicare FFS 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 **bold 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; ED = emergency department; PBPM = per beneficiary per month.

Figure ES.11. Estimated CPC impact on Medicare Part A and Part B expenditures PBPM, 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 year in the figure, is equal to the difference in mean outcomes between attributed Medicare FFS beneficiaries in CPC and comparison group practices in the first three 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 dashed vertical line through each impact estimate shows the 90 percent confidence interval.

[a] Impact estimates that fall in the shaded net savings region would 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; PBPM = per beneficiary per month.

For high-risk beneficiaries (those with the highest quartile of 2012 HCC scores), the cumulative decline between baseline and the first three years in average monthly Medicare expenditures without care management fees was $10 PBPM, or 1 percent less, for the CPC group relative to the comparison group, and not statistically significant. This was similar in magnitude to the decline observed for all beneficiaries.

For two other high-risk subgroups of beneficiaries, defined based on incidence of specific chronic conditions and hospitalizations at baseline, the magnitudes of estimated impacts were more favorable, suggesting increases in Medicare expenditures over time were smaller than for similar beneficiaries in matched comparison practices by $41 ($p$ = 0.18) and $60 ($p$ = 0.101), or 2 and 3 percent, respectively. However, the subgroup-specific impacts were not significantly different from the overall impact estimate in either case. The results suggest that the favorable effects for the second of these two high-risk subgroups—about 6 to 9 percent of all attributed beneficiaries, depending on the year—account for around half of CPC's overall impact of -$9 PBPM for all beneficiaries. (This second subgroup includes beneficiaries who had at least 2 of 13 chronic conditions—congestive heart failure, chronic obstructive pulmonary disease, acute myocardial infarction, ischemic heart disease, diabetes, any type of cancer other than skin cancer, stroke, depression, dementia, atrial fibrillation, osteoporosis, rheumatoid arthritis or

osteoarthritis, and chronic kidney disease—and at least two hospitalizations in the two years prior to CPC.)

Although the evaluation indicates there were no CPC-wide statistically significant savings in total Medicare expenditures over CPC's first three years, cumulative expenditure estimates by service category for the CPC group relative to the comparison group over time showed statistically significant reductions in expenditures for skilled nursing facilities (5 percent), outpatient services (2 percent), and primary care clinician services (2 percent). The savings in outpatient expenditures (which include expenditures on outpatient ED visits, observation stays, and other outpatient services and procedures, but not physician visits) were consistent with the statistically significant reductions in annualized outpatient and total ED visits of 8 ($p = 0.07$) and 12 ($p = 0.02$) per 1,000 beneficiaries, respectively, or 2 percent, over the first three years. Although there were no offsetting, statistically significant increases in expenditures or utilization for other services, the service categories with favorable effects do not make up a large share of total Medicare expenditures, so the estimate of savings in total Medicare expenditures before fees was modest and not statistically significant.

Including the care management fees, Medicare expenditures increased by $7 more for CPC than comparison practices over the first 36 months, though this difference was not statistically significant ($p = 0.27$, 90 percent CI -$3, $18). Therefore, it is highly unlikely that CPC generated enough savings to cover the $16 average PBPM fees. (Because we follow beneficiaries even if the practice no longer receives fees for them, the average PBPM fee received among ever-attributed beneficiaries was $16—less than the average specified amount over the first three years of approximately $19).[14] Similarly, our Bayesian analysis suggests that, although there is an 80 percent probability that CPC generated some reduction in Medicare expenditures (excluding the care management fees) over the first 36 months, the likelihood that those savings were greater than the $16 PBPM fee paid is only 0.1 percent.

Quality of care. There were minimal effects on the claims-based quality-of-care process and outcome measures we examined, which do not include the eCQMs being used for quality improvement and for calculating shared savings. Of the seven quality-of-care process measures examined, the only statistically significant estimates were greater increases for one of the two summary measures of process-of-diabetes-care for the CPC group relative to the comparison group between the year before CPC began and each of the first two years among high-risk beneficiaries, and an improvement in one of the individual process measures for patients with diabetes among both all beneficiaries and high-risk beneficiaries. The difference was 2.4 percentage points (around 8 percent of the baseline rate) in one summary measure (receiving all four recommended tests we tracked for diabetes) among high-risk beneficiaries with diabetes in Year 1 and Year 2 ($p = 0.01$ and $p = 0.03$, respectively), although the effect was close to zero in Year 3 and there were no significant effects on either summary measure among all patients. For individual quality-of-care process measures for diabetes or ischemic vascular disease, since the

[14] Across the four risk quartiles, CMS paid an average of $20 PBPM in care management fees during quarters 1 through 9 (until December 2014) of CPC, and reduced it to an average of $15 PBPM from January 2015 onward (for the last three quarters used in this analysis). Therefore, over the first 12 quarters of CPC, the average PBPM care management fees paid for those continuing to be attributed to a practice was approximately $19. However, the average PBPM fees received in our intent-to-treat analysis sample was $16, because we retain all beneficiaries who were ever attributed, even if a practice does not receive fees for them because they are no longer attributed.

year before CPC began, the CPC group relative to the comparison group saw a 3 percent increase ($p = 0.09$) in urine protein testing during Year 2 among all beneficiaries with diabetes, and similar statistically significant improvements of 3 percent in urine protein testing in both Years 1 and 2 ($p = 0.05$ in year 1 and $p = 0.03$ in year 2) among high-risk beneficiaries.

Among the four quality-of-care outcome measures that we examined, the only statistically significant effect was on the likelihood of an ED revisit within 30 days of an outpatient ED visit, among all beneficiaries. Consistent with the statistically significant reductions in both outpatient and total ED visits observed for all beneficiaries that emerged in Year 3, for the CPC group relative to the comparison group, the likelihood of an ED revisit within 30 days of an outpatient ED visit declined by 5 percent ($p < 0.01$) since the year before CPC among all beneficiaries in Year 3. Given the large number of tests of statistical significance being conducted for quality-of-care process and outcome measures (11 measures over three years, for a total of 33 tests, in the CPC-wide results), the yearly impacts for quality measures should be interpreted with caution. Therefore, we also examined the cumulative effect over the three years for the likelihood of an ED revisit, which was not statistically significant. However, given that the favorable Year 3 estimate for ED revisits was statistically significant at the one percent significance level, and was consistent with the finding that all ED visits were reduced in Year 3, it is likely to be a true effect of CPC. Additionally, when deep-dive practices are asked whether they think CPC activities are having any impact on patient outcomes, they frequently note that several of their efforts are likely reducing the use of the ED. These changes include, for example, better identification and outreach by practices to patients who are frequent ED visitors, enhancements in identifying high-risk patients and more frequent outreach to them by care managers, encouraging patients to call the office before using the ED for nonurgent care, and improved accessibility to office-based primary care.

ES.7. There was little relationship between changes in CPC practices' self-reported measures of care delivery and their changes in Medicare service use and expenditures from baseline to the third program year (Chapter 8)

We examined whether—among CPC practices—practices with bigger improvements in care delivery had bigger improvements in patient outcomes. The results suggest that practice transformation, as measured by increases in the overall score, specific domains, and individual items of the M-PCMH-A, had at best a weak association with changes in Medicare service use and expenditures between baseline and 2015. This analysis builds on more limited analyses we had conducted in last year's annual report, which examined the link between changes in M-PCMH-A scores and hospitalizations per thousand attributed patients in 2014.

Examining first the same hospitalization rate outcome as was used last year, we find that the strong relationship observed for the period from baseline to 2014 between a summary score of practice transformation and reductions in hospitalizations does not exist when we use 2015 measures for both the M-PCMH-A and hospitalizations. In other words, CPC practices that made larger improvements in care delivery had bigger reductions in hospitalizations in 2014, but not in 2015.

The relationship between care delivery approaches and hospitalizations changed due to the variability in practices' hospitalization rates over time. The change in findings is not due to changes in practices' M-PCMH-A responses, which were small between 2014 and 2015. The average hospitalization rates in 2014 and 2015 were similar—and both lower than at baseline. However, the hospitalization rates for many individual CPC practices were quite different in 2015 than in 2014. Thus, the reductions in 2015 hospitalizations since baseline were experienced roughly equally by practices making large changes and those making small changes in care delivery, as measured by the change in their M-PCMH-A score. This shift in the association led to the disappearance of a relationship between M-PCMH-A change and reductions in hospitalizations.

Whereas 2014 results showed that, for 15 of the 37 items that make up the M-PCMH-A, improvements were significantly associated with reduced hospitalizations at the 5 percent level, in the 2015 results, only 2 items had a significant favorable relationship, about what is expected to occur by chance. Of the six other outcomes examined (Medicare expenditures, ED outpatient visits, observation stays—a subset of ED outpatient visits, total hospital outpatient expenditures,[15] primary care visits, and specialist visits), improvements in the M-PCMH-A overall score were associated with reductions in only observation stays. Improvements in three of the seven M-PCMH-A domains were significantly associated with reductions in observation stays; none of the associations between the domains and other outcomes was statistically significant. Turning to the individual M-PCMH-A items, improvements in 5 of the 37 individual items were significantly associated with reductions in ED outpatient visits; and improvements in 4 of the items were associated with reductions in observation stays. Changes in few or none of the 37 items were associated with reductions in any of the other service use and expenditure outcomes examined.

The relationship between improvements in individual items of the M-PCMH-A and reductions in service use and expenditure outcomes between baseline and 2015 were quite different for CPC practices owned by physicians than for CPC practices owned by hospitals or health systems. We find many more statistically significant associations between scores and outcomes for the hospital- or system-owned practices than for the physician-owned practices. However, half of these significant associations show that service use increases with score increases, and half show that service use decreases with score increases. The results suggest that the very different incentives faced by hospital-owned versus physician-owned practices may greatly influence the relationship between improvements in care delivery and outcomes observed.

[15] Outpatient expenditures include all Medicare FFS expenditures for all ED outpatient services, observation stays, and hospital outpatient department services.

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

Over the next year, we will continue to monitor the implementation and impacts of CPC through December 2016 (which marks the end of the initiative) to determine whether the effects persist or grow, 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. In the coming year, we will develop stronger and more nuanced conceptual models and conduct more sophisticated empirical work to determine which M-PCMH-A items, if any, show score improvements that are consistently associated with reductions in different types of services and costs. We will also assess whether other data on practice transformation, such as survey data collected in 2013 and 2016 from clinicians and staff, and annual data collected from patients, yield different results. 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 (Figure 1.1). This unique collaboration between CMS and 39 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 clinician and staff experience. The four-year initiative will end on December 31, 2016.

CPC is a test of a new model of care delivery for nearly 500 primary care practices across seven regions of the United States. 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 of other providers who treat the same patients. CMS specified a series of Milestones to help practices implement these functions, and it updates the requirements for each Milestone annually to build on practices' progress in the prior year (Table 1.1). CMS assesses how the practices are delivering care and requires that practices meet the Milestone requirements to remain in the program.[16]

Table 1.1. CPC Milestones for PY2015

1.	**Budget.** Report actual CPC expenditures from PY2014. Complete an annotated annual budget with projected CPC initiative practice revenue flow for PY2015 and actual revenue/expenses from PY2014.
2.	**Care management for high-risk patients.** Continue to risk-stratify patients and expand care management activities for highest risk patients and to 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 hours a day, 7 days a week with a care team that has real-time access to their electronic medical records. Continue to implement asynchronous forms of communication (for example, patient portal and email) and ensure timely responses. Measure visit continuity by empaneled patients to providers in the practice.
4.	**Patient experience.** Assess patient experience through patient surveys or patient and family advisory council meetings and communicate to patients (using electronic, poster, pamphlet, or similar communication methods) about resulting changes the practice is making.
5.	**Quality improvement.** Continue to perform continuous quality improvement using electronic health record (EHR)-based clinical quality measures (eCQMs) on at least three of the nine measures that practices report annually. Review at least one payer data feedback report (CMS Practice Feedback Report or other payers' reports) to identify a high-cost area and a practice strategy to reduce cost in this area while maintaining or improving quality.

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

Table 1.1. *(continued)*

6.	**Care coordination across the medical neighborhood.** Track patients by implementing two of three options: follow-up via telephone with patients within one week of an emergency department (ED) visits; 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 (SDM).** Use at least three decision aids to support SDM for three preference-sensitive conditions and track patient eligibility for and use of the aids.
8.	**Participating in learning collaborative.** Participate in regional and national learning offerings, participate in at least one of the advance primary care action groups,[a] and communicate with regional learning faculty.
9.	**Health information technology.** Attest that each eligible professional in the practice is engaged with and working toward attestation for Stage II Meaningful Use in the timelines set by the Meaningful Use program.

[a] The advanced action groups covered behavioral health integration, self-management support, and medication management.

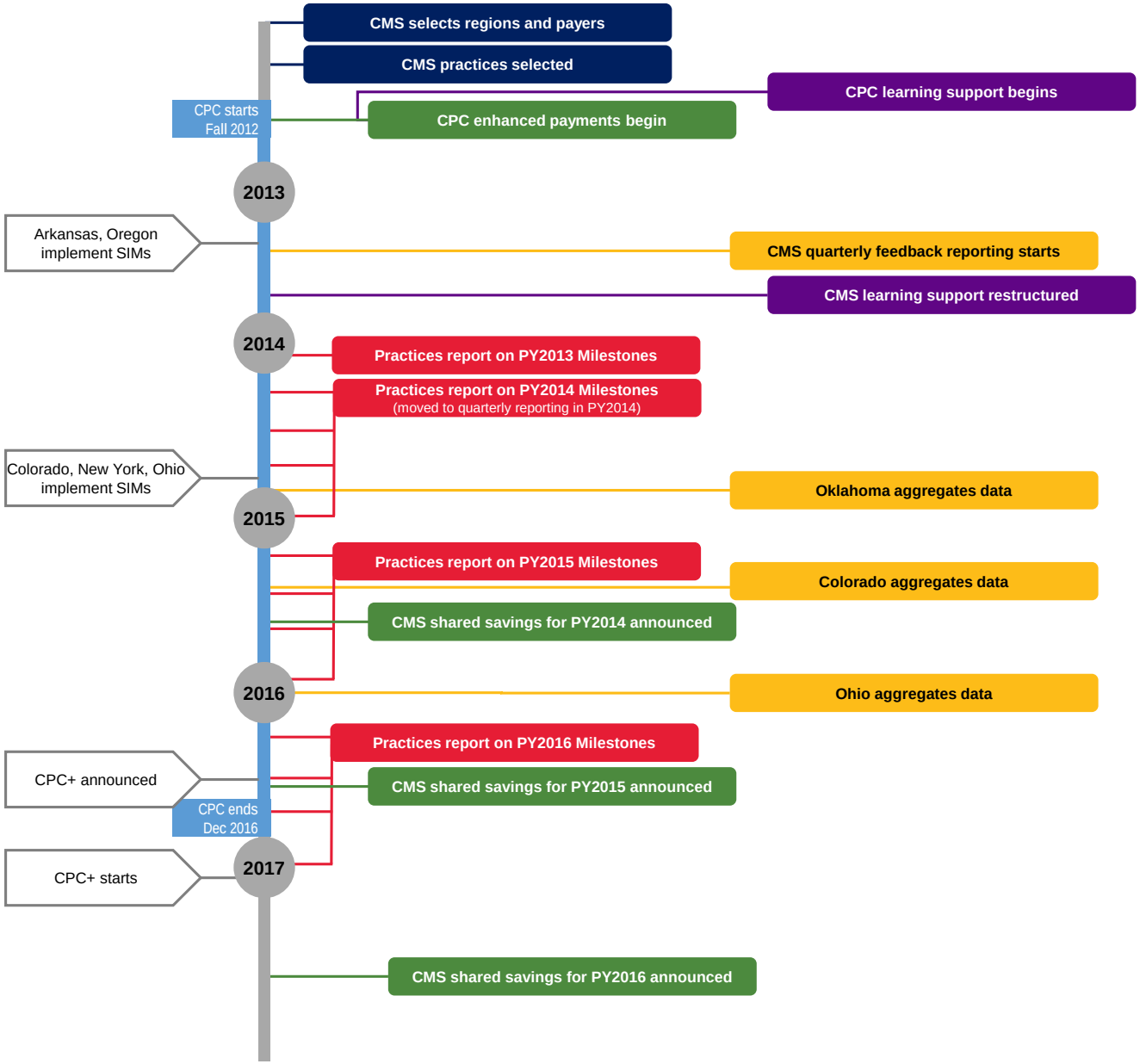
To help participating practices change care delivery and accomplish the goals of CPC, the initiative provides them with the following supports:

- **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 and $15 per beneficiary per month (PBPM) starting in January 2015 through the end of the initiative (with payments of $6, $8, $16, or $30, depending on the patient's risk of future expenditures). Unlike Medicare, most other payers (70 percent) did not reduce their payments to practices in January 2015. In 2015, enhanced payment from other payers varied, but for most business lines (such as commercial), it averaged much lower than those provided for Medicare FFS beneficiaries, ranging from approximately $2 to $30, which reflects in part the greater needs of Medicare FFS patients. During the last three years of the program, Medicare FFS and around two-thirds of other 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.
- **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 most other participating payers. To increase reporting consistency, payers in five of the seven regions are using aligned templates to report on a common set of measures or providing practices aggregated reports (in which a third party combines data from all payers and provides that data feedback to practices in a single report).
- **Learning support,** consisting of group and individual support provided by support organizations and opportunities for peer-to-peer learning to help practices build quality improvement capacity and make changes to provide comprehensive primary care.

Figure 1.1 shows the timeline for CPC. CMS selected regions and payers in April 2012, and practices in August 2012. The initiative began in fall 2012. CMS began providing practices with quarterly performance feedback in April 2013. In PY2013, practices reported on Milestones at the end of the year. In subsequent years, practices have been required to report on Milestones quarterly. CMS announced its first shared savings distributions (based on PY2014 performance) in September 2015. The initiative ends on December 31, 2016. In April 2016, CMS announced another multipayer primary care model, Comprehensive Primary Care Plus (CPC+), which builds on the lessons of CPC and will begin on January 1, 2017.[17] As with CPC, CMS will once again select regions and payers, and then practices, and has given priority to current CPC regions and practices.

[17] For more information on CPC+, visit https://innovation.cms.gov/initiatives/comprehensive-primary-care-plus.

Figure 1.1. CPC implementation timeline



Note: State Innovation Models (SIMs) are funded by CMS and led by the state's Medicaid program. States are using SIM awards to test multipayer health care payment and service delivery models that aim to improve health system performance, increase quality of care, and decrease costs.

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 support 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 where possible); 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); qualitative data (collected through site visits, interviews, and observations with practices, health systems, payers, and patients); and Medicare claims data.[18] To assess the initiative's effects on costs and quality for Medicare FFS patients and on stakeholder experience, we compare outcomes for CPC practices with 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 and participating practices, 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 third annual report to CMS contains recent findings from our study of CPC's implementation through December 2015 (or Program Year 2015, hereafter referred to as PY2015) and impacts for the first 36 months of CPC, through September 2015. The first annual report (Taylor et al. 2015) covered implementation in PY2013 (October 2012 through December 2013) and impacts through September 2013; the second annual report (Peikes et al. 2016)

[18] We may also examine effects on Medicaid FFS patients in Oklahoma because it has enough Medicaid FFS patients in both CPC and comparison practices. Because of data lags, however, we would include this analysis only in the final annual report.

covered implementation from the start of the initiative through PY2014 (January through December 2014) and impacts through September 2014.

In Chapters 2 through 5 of this report, 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 third year. We also describe how payers and other stakeholders are working together and how practices are changing the way they deliver care. 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 from October 2012 through September 2015.

In Chapter 8, we synthesize CPC's implementation and impact findings to date, distilling lessons learned on improving outcomes by improving care in five functional areas to deliver comprehensive primary care.

1.4. Final report

In the final year of CPC, we will continue to monitor the implementation and impacts of the initiative through December 2016 (which marks the end of the initiative) to determine whether the effects persist or grow, as the practices gain experience and meet 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. We also will study what activities, programs, or initiatives (if any) practices plan to pursue after the CPC initiative ends.

- 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 will also 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 that 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. In the coming year, we will develop stronger and more nuanced conceptual models and conduct more sophisticated empirical work to determine which M-PCMH-A items, if any, show score improvements that are consistently associated with reductions in different types of services and costs. We will also assess whether other data on practice transformation, such as survey data collected in 2013 and 2016 from clinicians and staff, and annual data collected from patients, yield different results. 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. For information on the characteristics of the initiative's participating regions, payers, practices, and patients and how participants were selected, see the first annual report (Taylor et al. 2015). In this chapter, we present information on how participation has changed during the initiative's first three years.

2.1. Key takeaways on CPC participation

- CMS and 36 of the original 39 other participating payers, including five state Medicaid agencies, are working together to make a substantial investment of public and private resources to redesign primary care in CPC's seven regions.[19] Payer participation has remained steady, with only a few small payers leaving CPC or merging with another participating payer during CPC's first three program years (Table 2.1).
- 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 2015, 13 of the 27 payers with self-insured clients included all or most of their self-insured lives in CPC, 6 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.
- Practices are diverse and include independent and system owned practices, practices that were and were not recognized as medical homes, and practices of different sizes. Practices were not selected based on care delivery approaches or outcomes. Most had substantial opportunities to improve care delivery at the start of CPC.
- Practice participation has remained relatively stable in the initiative's first three years, with 10.2 percent of the 502 practices that CMS selected to participate in CPC withdrawing and another 1.6 percent having been terminated from the initiative. While the rate of practice withdrawals has been low, 30 of the 51 withdrawals that occurred during CPC's first three program years came during the last quarter of PY2015. Most of the 34 practices that left CPC in 2015 voluntarily withdrew to join Medicare ACOs (23 practices) or due to challenges meeting CPC requirements (6 practices). In addition, CMS terminated four practices for failure to comply with CMS terms and conditions in 2015, and one practice

[19] Payers participating in more than one region are counted separately for each region in which they participate. There are 28 distinct payers participating in CPC in addition to Medicare.

closed. As of December 31, 2015 (the end of the third program year), after withdrawals, terminations, and practice splits, 445 practices with 2,135 clinicians were still participating in CPC

- Among the 59 practices that withdrew (51) or were terminated (8) from CPC during its first three program years, the most common reason was voluntary withdrawal to join a Medicare accountable care organization (ACO) (29 practices). Five practices also voluntarily withdrew early in the initiative, after reviewing initial program requirements (5 practices). In addition, some practices voluntarily withdrew due to challenges in meeting CPC requirements (12 practices) or because the practice closed (5 practices). In addition, CMS terminated 8 practices that did not satisfy program requirements. Several CPC practices also changed their composition: 3 CPC practices merged, and 5 practices split into two practices.
- Although practices receive care management fees only for attributed patients of participating payers, practices are expected to deliver the same care to all patients they see. This population includes patients of participating payers who were not attributed to the practice, patients of nonparticipating payers, and uninsured patients. During CPC's first three program years, the number of both total and attributed patients was substantial, with total patients estimated at 2.8 million across all participating practices (based on practice-reported Milestone data).

Table 2.1. Number of CPC participants at the start of the initiative and the end of PY2013, PY2014, and PY2015

CPC participant	Start of CPC initiative (Fall 2012)	End of PY2013 (Dec 2013)	End of PY2014 (Dec 2014)	End of PY2015 (Dec 2015)
Regions	7	7	7	7
Payers[a]	39	37	37	36
Practices	502	492	479	445
Clinicians	2,172	2,158	2,200	2,135
Attributed Medicare FFS patients[b]	313,950	326,100	337,617	329,270
Attributed patients of other participating payers[c]	Not known	887,846	807,734	824,081
Other, nonattributed patients served by practices[c]	Not known	1,330,326	1,655,617	1,692,744
Total patients served by practices (attributed plus nonattributed)	Not known	2,544,272	2,800,968	2,846,095

[a] Reflects participating payers other than Medicare FFS. Payers participating in more than one region are counted for each region in which they participate.

[b] Source: ARC provides lists of attributed Medicare beneficiaries each quarter; these lists were deduplicated 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 in their PY2013, PY2014, and PY2015 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 analyzed the budget data for PY2013; Bland and Associates analyzed these data for PY2014 and PY2015; 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 leveraged the support of 39 payers at the start of the initiative—including national and regional private payers, as well as public payers. Payer participation has remained relatively stable, with a few payers withdrawing early in the initiative and another payer withdrawing in 2015 (Table 2.2). Specifically, Colorado Access, a Colorado payer with a small number of attributed patients in CPC, withdrew on December 31, 2015, after discontinuing its Medicare Advantage line of business. At the end of 2015, 36 payers were participating in CPC.[20]

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 business; others operate several lines of business, such as commercial, Medicare Advantage, and self-insured. Payers also vary in 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).[21] 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). Additionally, Medicaid FFS participates in five regions. In four of these regions, Arkansas, Colorado, Ohio, and Oregon, CMS pays the CPC care management fees for Medicaid FFS beneficiaries. In Oklahoma, Medicaid collaborates in CPC and is counted as a participating payer but does not provide care management fees to participating practices.

[20] Payers participating in more than one region are counted separately for each region in which they participate. In addition to Medicare, there are 28 distinct payers participating in CPC as of December 31, 2015.

[21] Colorado Access, which participated in CPC for its Medicare Advantage and Children's Health Insurance Program lines of business, withdrew from CPC on December 31, 2015, after discontinuing its Medicare Advantage line of business. As of January 2016, 18 CPC payers include Medicare Advantage in CPC.

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
December 2013	37	4	9	4	4	8	3	5
December 2014	37	4	9	4	4	8	3	5
December 2015	**36**	**4**	**8**	**4**	**4**	**8**	**3**	**5**
Changes in payer counts								
Added[b]	1	0	1	0	0	0	0	0
Withdrawn[c]	4	0	1	0	1	2	0	0
Practices								
October 2012	502	69	74	72	75	75	68	69
March 2013 (analysis sample)	497	69	74	70	74	75	68	67
December 2013	492	65	74	70	75	75	66	67
December 2014	479	61	71	68	74	75	63	67
December 2015	**445**	**57**	**69**	**54**	**64**	**75**	**61**	**65**
Changes in practice counts between October 2012 and December 2015								
Practice terminated	8	2	0	3	2	0	1	0
Practice withdrew	51	10	7	16	9	0	4	5
Practice split into two practices (adding a practice to total count)	5	0	2	1	1	0	0	1
Practice merged with another CPC practice (subtracting a practice from total count)	3	0	0	0	1	0	2	0
Clinicians (physicians, nurse practitioners, physician assistants)[d]								
October 2012	2,172	262	332	254	286	264	265	509
March 2013	2,183	261	351	252	290	268	264	497
December 2013	2,158	248	359	246	300	265	236	504
December 2014	2,200	232	354	253	307	282	219	553
December 2015	**2,135**	**230**	**363**	**192**	**271**	**289**	**233**	**557**
Patients								
Medicare FFS beneficiaries								
March 2013	313,950	54,661	41,890	41,643	39,171	44,486	43,740	48,359
December 2013	326,100	56,947	44,875	42,999	40,316	44,385	46,401	50,177
December 2014	337,617	56,468	49,326	45,348	41,285	45,372	47,259	52,559
December 2015	**329,270**	**51,183**	**48,516**	**43,288**	**42,296**	**45,636**	**45,733**	**52,618**

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Table 2.2. *(continued)*

	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,f]								
December 2013	887,846[f]	.	.	.	.	.	.	.
December 2014	807,734	100,458	141,403	96,188	158,348	140,992	85,201	85,144
December 2015	**824,081**	**132,253**	**139,867**	**88,133**	**146,351**	**136,080**	**86,938**	**94,459**
Other, nonattributed patients served by practices								
December 2013	1,330,326	174,351	218,970	172,261	129,880	210,144	170,557	254,163
December 2014	1,655,617	165,204	200,094	305,285	166,538	162,608	263,122	392,766
December 2015	**1,692,744**	**177,713**	**265,035**	**163,521**	**191,550**	**192,869**	**259,942**	**442,114**

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. On December 31, 2015, Colorado Access, a payer in the Colorado region with few attributed patients in CPC, withdrew from CPC after discontinuing its Medicare Advantage line of business.

[d] Clinicians include 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.

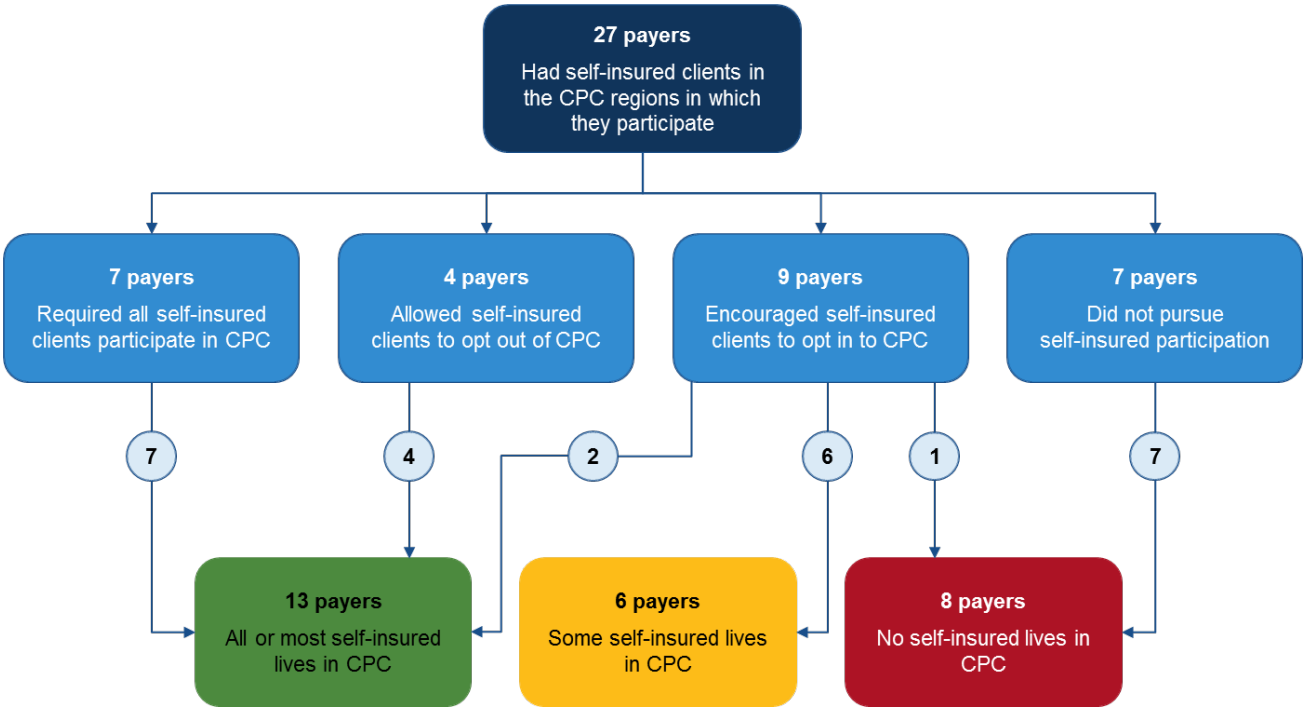
[f] Regional estimates for attributed patients were not calculated for 2013.

FFS = fee for service.

In addition to their fully insured business, 27 participating payers have self-insured clients (employers or other entities) in the regions covered by CPC.[22] The number of payers with self-insured clients increased from 26 in 2014, because one payer added its first self-insured client in a CPC region in 2015.

As of summer 2015, 20 of the 27 payers with self-insured clients were pursuing self-insured participation in CPC (Figure 2.1). Payers continue to educate their self-insured clients on the goals of the initiative to encourage new or continued participation. [23] In addition, a few have started to share outcomes data with employers to help demonstrate CPC's return on investment for clients. For example, one payer is providing large employers with data on emergency department (ED) use, hospital readmission rates, and overall costs for their employees overall and for those attributed to CPC practices. As in PY2014, payers using the two most inclusive recruitment approaches (requiring self-insured participation or enrolling all self-insured clients unless they explicitly opt out) enrolled all or most clients in CPC.

Figure 2.1. Self-insured participation in CPC in summer 2015



Source: Mathematica interviews with CPC payers.

[22] When payers in more than on region are counted once, 19 distinct payers have self-insured clients in CPC regions. Several payers operating in more than one region use different approaches to involve self-insured clients in CPC, depending on the region.

[23] The second annual report provides additional detail on payers' approaches to increase self-insured participation in CPC (Peikes et al. 2016).

Between summer 2014 and 2015, seven CPC payers transitioned to more active or inclusive strategies for recruiting self-insured clients. Of these, four payers started requiring all self-insured clients participate in CPC. (Three of these payers reported the number of self-insured patients they attributed to CPC practices increased by 85 to 152 percent between PY2014 and PY2015 depending on the payer.) Another payer, that previously encouraged self-insured clients to join CPC, started automatically enrolling clients unless they opted out. The other two of these seven payers started pursuing self-insured participation for the first time but, as of summer 2015, had not yet enrolled any groups.

In contrast, five other payers decreased their focus on self-insured participation between summer 2014 and 2015. However, this decreased focus resulted in few or no changes in the number of self-insured lives attributed to CPC practices. Four of these payers had previously encouraged clients to join CPC but stopped pursuing their participation because no or very few clients had opted to participate during CPC's first two years. The fifth of these payers stopped automatically enrolling clients in CPC but, by encouraging them to opt in, maintained steady participation.

2.3. Participating practices and patients

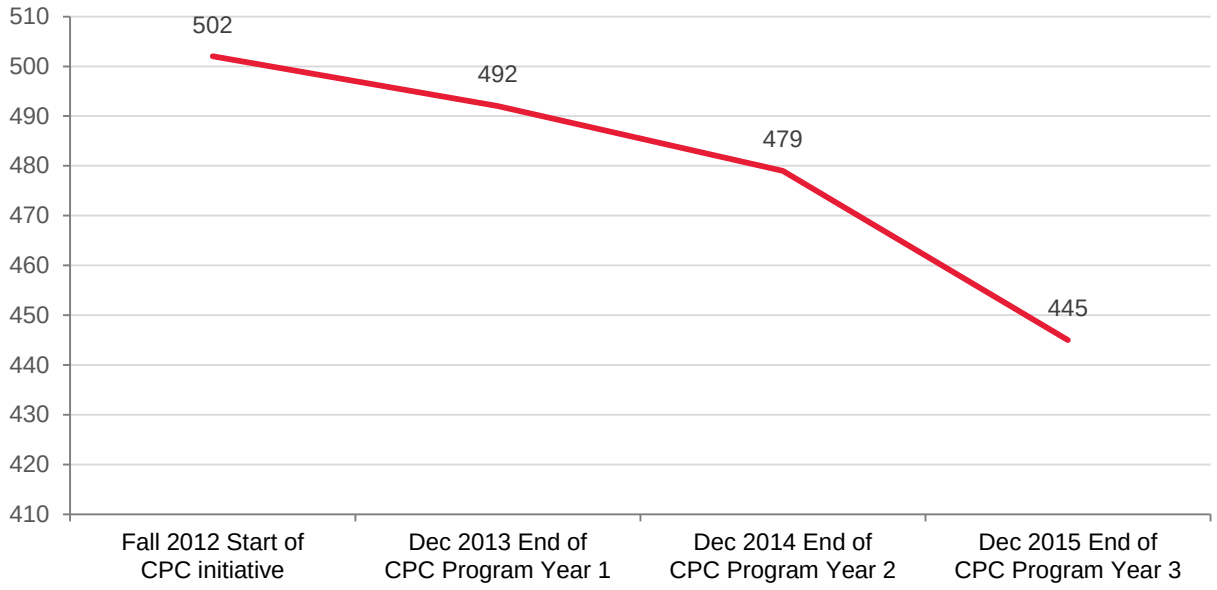
Participating practices. CMS selected 502 practices for participation in CPC at the start of the initiative. These practices were diverse on many dimensions, including size, the extent to which they were independent versus part of a multidisciplinary group or health system, and whether they had medical home recognition. Five of the 502 practices selected withdrew early in the initiative, after assessing CPC's terms and conditions. Among the remaining 497 CPC practices, 17 percent were solo practitioners, whereas 27 percent had 6 or more clinicians. Eighteen percent were multispecialty practices, 55 percent were owned by a larger organization, and 39 percent had National Committee for Quality Assurance (NCQA) or state-certified medical home recognition. Although CMS selected about half the practices that applied to CPC, CMS did not do so on the basis of practices' approaches to primary care delivery or outcomes at baseline. The CPC practices, like primary care practices nationwide, faced substantial opportunities to improve care. For more information on practice characteristics at baseline, see Taylor et al. 2015.

Practice participation has remained relatively stable during the first three years of CPC, with 10.2 percent of practices withdrawing and another 1.6 percent having been terminated from the initiative (Figure 2.2). While the rate of practice withdrawals has been low, 30 of the 51 withdrawals that occurred during CPC's first three program years came during the last quarter of PY2015. Thirty of the 34 practices that left CPC in 2015 voluntarily withdrew to join an ACO (23 practices), left due to challenges meeting CPC requirements (6 practices), or closed (1 practice) (see Table 2.3).[24] Voluntary practice withdrawals were concentrated in the New Jersey and New York regions, which had 12 and 8 practices withdraw, respectively. Three practices each in Arkansas, Colorado, and Oregon, and one practice in Oklahoma, also withdrew. In

[24] Practices could not participate in both CPC and the Medicare Shared Savings Program (MSSP) or other Medicare ACO models. In contrast, CMS will allow practices to participate in both MSSP and CPC+, which will begin in January 2017.

addition, CMS terminated four practices (two in New Jersey and one each in Arkansas and New York) for failure to comply with CMS terms and conditions in 2015.

Figure 2.2. Number of CPC participating practices from the start of initiative through end of December 2015



Source: Mathematica analysis of Telligen practice tracking database.

Table 2.3. Reasons for participating practices leaving CPC, through December 2015

Reason for practice leaving CPC	Total	PY2013	PY2014	PY2015
Total number of practice departures for any reason	59	10	15	34
Voluntary withdrawals				
Early withdrawals (after practices assessed the terms and conditions of CPC participation just after its start)	5	5	n/a	n/a
Challenges completing CPC requirements	12	0	6	6
Decision to join a Medicare ACO	29	2	4	23
Practice closed/solo practitioner retired	5	3	1	1
Terminations by CMS	8	0	4	4

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

As a whole, practices leaving CPC in PY2015 were smaller than practices remaining in CPC as of January 2016 (Table 2.4). Due to their smaller size, practices leaving CPC received fewer care management fees than practices remaining in the initiative; however, per clinician payments were similar. Additionally, practices leaving CPC to join an ACO or due to challenges completing CPC requirements were less likely to (1) have reviewed Medicare FFS feedback reports most or all of the time, (2) have interacted with their regional learning faculty at least weekly, and (3) believe CPC improved the quality of their care a lot in PY2015 as compared with those remaining in CPC.

We conducted interviews with 14 practices leaving CPC in PY2015 (7 withdrawing to join ACOs, 5 withdrawing due to challenges meeting CPC requirements, one closed practice, and one practice terminated by CMS). Several practices withdrawing from CPC to join Medicare ACOs belonged to large health care organizations and indicated that breaking away from their health system's standardized procedures to establish different workflows and documentation and reporting processes for CPC was challenging or inefficient. Moreover, several of these practices were surprised by the administrative burden required to report CPC Milestones and electronic clinical quality measures (eCQMs). These practices indicated that ACOs were more attractive than CPC, because they have fewer administrative requirements, all practices in their system could join and the program, and they reward practices for savings based on all providers in the system; thus, they are potentially more lucrative than CPC.

Table 2.4. Comparison of practices leaving CPC in PY2015 to practices remaining in CPC as of January 2016

	Practices leaving CPC in PY2015 (n = 33)[a]	Practices remaining in CPC as of Jan 2016 (n = 441)[a]
Practice characteristics		
Number of participating clinicians per practice (percentage)**		
One clinician	**42.4**%	**20.4**%
Two to three clinicians	**36.4**	**35.6**
Four to five clinicians	**6.1**	**21.8**
Six or more clinicians	**15.2**	**22.2**
Practice site is owned by a larger health care organization (percentage)[b]	39.4%	46.0%
Practice had PCMH recognition at start of CPC (percentage)	45.5%	40.4%
Practice modified PCMH-A score at the start of CPC (mean, out of 12)	6.3	6.5
CPC Supports		
Payment		
Practice indicates payments from Medicare FFS are adequate (percentage)	72.7%	76.6%
CPC funding per practice in PY2014 (median)**	**$152,851**	**$212,138**
CPC funding per clinician in PY2014 (median)	$64,027	$60,420
Data feedback		
Practices view Medicare FFS feedback reports as very useful (percentage)	44.8%	32.9%
Practice reviews Medicare FFS feedback reports most or all of the time (percentage)*	**63.6%**	**78.2%**
Learning support		
RLF communicated with practice at least once a week (percentage)**	**9.1%**	**27.9%**
Practice rated RLF as excellent (percentage)	45.5%	35.6%
Perception of CPC		
Practices indicated participation in CPC improved its quality of care a lot (percentage)	42.4%	54.0%

Source: CPC practice surveys administered in 2012, 2014, and 2015; CPC practice applications; PY2014 CPC budget data submitted by practices to CMS.

Note: */**/*** statistically significant at the 0.10/0.05/0.01 level. Statistically significant findings are bolded in the table.

[a] Five new practices (one that withdrew from CPC and four that remained in the initiative) were formed as a result of CPC practices splitting into two practices. These practices did not submit practice applications and, thus, are excluded from this analysis.

[b] Practices owned by a larger health care organization include practices where the clinicians are employed by, or the practice is owned by, a group or staff model HMO, hospital, hospital system, or medical school.

RLF = regional learning faculty.

The five practices we spoke to that withdrew due to challenges meeting CPC requirements were typically small or solo practices. Most often, these practices reported difficulties fulfilling CPC Milestone requirements related to care management and the medical neighborhood. Several practices also were overwhelmed by CPC reporting requirements or were unable to generate needed reports from their electronic health records (EHRs). Practices pointed to staffing challenges, including difficulties finding staff with sufficient time to work on the initiative and problems hiring and retaining qualified care managers, as contributing factors. Additionally, some practices felt CPC care management fees were inadequate for them to successfully participate. Following CMS's planned reduction in the CPC payment from $20 to $15 per beneficiary per month (PBPM) in 2015, one practice withdrew from CPC and opted to start collecting the Medicare chronic care management (CCM) fee. CPC care management payments to this practice were around $15,000 less per clinician than the median payment per clinician for CPC practices in PY2015.

Participating patients. Participating practices reported having approximately 2.8 million active patients in the program's third year, including both attributed and nonattributed patients (Table 2.2). A median of 43 percent of participating practices' patient panels were attributed to them by Medicare FFS and other CPC payers in PY2015, though the proportion attributed varied across practices. The quarter of practices with the lowest attribution rates reported that 28 percent or less of their active patients were attributed to them. The quarter with the highest proportion of attributed patients reported 55 percent or more of their patients were attributed to them.

For patients attributed to their practice, CPC practices receive enhanced care management fees, as we detail in Chapter 3. However, participating practices are required to implement changes across their entire practice so that all patients they serve receive the benefits of CPC, regardless of patient attribution.

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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 PY2015, 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. This chapter draws on interviews with participating payers, practices, regional learning faculty, and CMS staff; data reported by practices on their CPC care management fees; practice survey data; and data on CPC learning support provided by TMF Health Quality Institute.

3.1. Key takeaways on CPC supports to practices

- Practices reported that CPC care management fees from all payers totaled $372 million from the start of the initiative through December 2015. Total payments ranged from $38 million in Oklahoma to $75 million in Ohio.

- As planned since the start of the initiative, Medicare FFS reduced the average care management fee it paid CPC practices from $20 to $15 per beneficiary per month (PBPM) beginning in January 2015. Unlike Medicare FFS, 73 percent of other payers did not reduce their per member per month (PMPM) payments. Across payers, practices reported a median decrease in CPC funding of 15 percent from PY2014 to PY2015.

- Despite this decrease, CPC practices continued to report receiving sizable care management fees from CMS and other participating payers in PY2015, in addition to their usual revenues. Across payers, practices received a median of $8.02 per attributed patient per month, or $3.27 per active patient per month.[25] This finding translated to a median of $175,775 per practice ($51,286 per clinician) over the course of PY2015, which averaged 12.5 percent of 2015 total practice revenue for CPC practices. In part due to the decrease in PMPM payments from some payers in January 2015, median payments to practices for PY2015 were lower than the median payments in PY2014 ($203,949 per practice; $64,142 per clinician) and PY2013 ($227,849 per practice; $70,045 per clinician).[26]

[25] The payment statistics we present in this section are based on an analysis of the PY2015 and PY2014 budget data by Bland and Associates. The methods used to calculate these statistics may differ slightly from those used by Mathematica to calculate the PY2013 statistics.

[26] Medicare FFS payments in PY2013 were higher than in PY2014, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

- Medicare and about two-thirds of other participating payers are also providing practices the opportunity to share in any savings accrued during each of the last three years of the initiative. Payers' approaches to calculating shared savings vary on a range of factors, including the level at which savings are calculated (that is, at the region level or for certain combinations of practices), the method used to calculate savings, and the quality measures used to determine whether practices are eligible to share in any savings.

- CMS announced the results of its shared savings calculations for PY2015 performance in October 2016. CMS found that CPC generated savings for PY2015 in four regions—Arkansas, Colorado, Oklahoma, and Oregon. Across these regions, CMS paid CPC practices more than $13 million in shared savings payments. (This is considerably larger than the PY2014 Medicare shared savings of $658,129 that CMS paid to practices in Oklahoma, the only region that realized net savings for that performance year.) At the time of our summer 2016 interviews, only a few non-Medicare payers had completed their shared savings calculations for PY2015. However, among the eighteen non-CMS payers that reported results for PY2014 performance, two payers each in Colorado, Ohio, and Oklahoma/Kentucky, as well as one payer each in Arkansas and Oregon, found CPC to generate savings in PY2014 for at least one line of business or group of practices.

- Practices received practice-level feedback from Medicare FFS and most other payers, and they received patient-level data files from Medicare FFS and more than half of other payers.[27] In PY2015, most payers started providing new or additional forms of feedback to practices, improved existing reports, or took steps to further align the contents and timing of feedback across payers. In 2015, payers in Colorado, Ohio/Kentucky, and Oklahoma spent considerable time and resources developing a data-aggregation approach. All three regions selected a vendor to aggregate the data, established a governance structure, and determined the initial content of the unified report. Payers in Colorado and Oklahoma released aggregated reports in PY2015; Ohio/Kentucky released its first aggregated report in January 2016.

- In the spring 2015 practice survey, a sizable proportion of practices reported reviewing practice-level reports from Medicare FFS (77 percent) or other payers (63 percent) all or most of the time. A smaller proportion of practices reported reviewing patient-level data files: 53 percent of practices reviewed Medicare FFS patient-level data files, and 41 percent reviewed other payers' patient-level data files all or most of the time.

- Some practice members in the deep-dive practices as well as RLF identified several limitations to using payers' feedback to drive quality improvement, including reports that represented small numbers of patients, the time lag for claims included in the reports, and the perception that some outcomes were outside of their control and improvements instead depended on patients, specialists, or hospitals.

[27] Payers operating in more than one region are counted multiple times, once for each region in which they participate. This analysis includes 36 payers; it excludes one payer that opted not to participate in interviews.

- CMS and its contractors facilitated practice transformation and provided opportunities for peer-to-peer learning through a range of learning supports in PY2015, including regional webinars and all-day in person meetings and cross-regional learning support. RLF also provided individualized practice coaching to a subset of practices. RLF selected practices to receive this coaching and adjusted its intensity depending on practices' progress toward meeting CPC Milestones and their performance on quarterly Medicare feedback reports. Additionally, in 2015, CMS introduced CPC Connect, a new online knowledge management and collaboration tool to replace CPC's collaboration website (the collaboration site) that had been used since the beginning of the initiative. Some practices also received supplemental support from payers or other stakeholders in their region.

- Most practices regularly participated in CPC learning activities. In the spring 2015 practice survey, the percentage of practices reporting at least monthly interactions with RLF ranged from 59 percent in Oregon to more than 95 percent in Colorado. Additionally, 72 percent of practices rate their RLF as excellent or very good in meeting their CPC-related needs. Deep-dive practices valued in-person learning sessions more than other group learning formats, indicating that these sessions permitted the opportunity to network with other practices and to learn from the experiences of their peers. Practices that received individualized coaching from the regional learning faculty (RLF), highly valued that support, which was tailored to practices' specific questions and challenges.

3.2. Payments to CPC practices

CMS and other payers are making substantial payments to CPC practices to support 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 largest share of their primary care visits during a two-year look-back 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."[28] Practices may also share in savings in total health care costs incurred by CMS and most other payers in the second, third, and fourth years of the initiative.

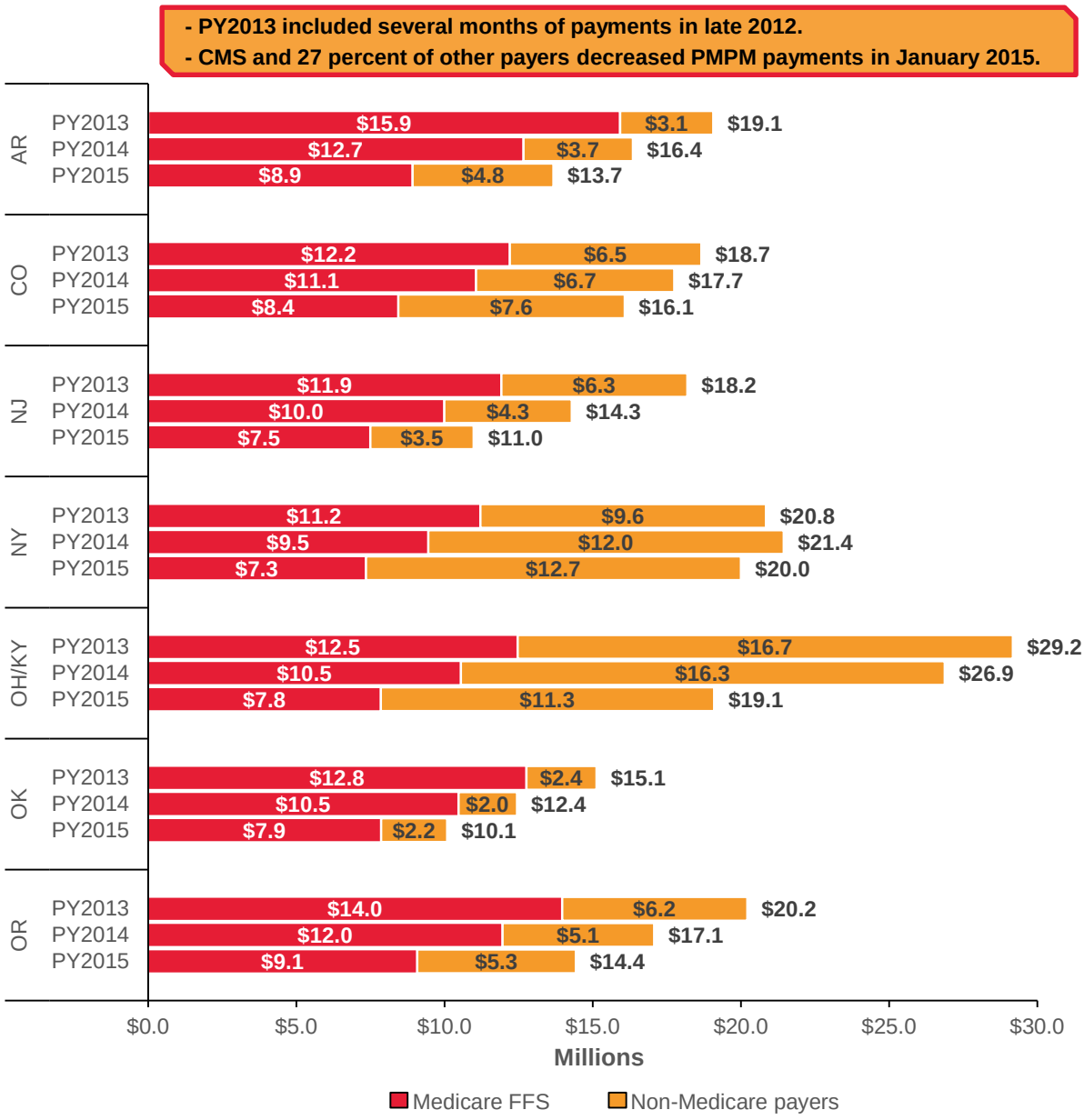
3.2.1. CPC provided substantial funding to participating practices for investing in primary care transformation

According to annual Milestone budget data on payments reported by participating practices, CPC's care management fees to practices totaled $371.9 million from the start of the initiative through December 2015.[29] Payments for PY2015 totaled $104.4 million, ranging from $10.1 million in Oklahoma to $20.0 million in New York (Figure 3.1). These payments represent a substantial infusion of revenue.

[28] Memoranda of understanding (MOUs) between CMS and each CPC participating payer.

[29] These statistics are based on Bland and Associates' analysis of practice-reported budget data.

Figure 3.1. Total CPC payments from Medicare and other payers, by region, in PY2013, PY2014, and PY2015



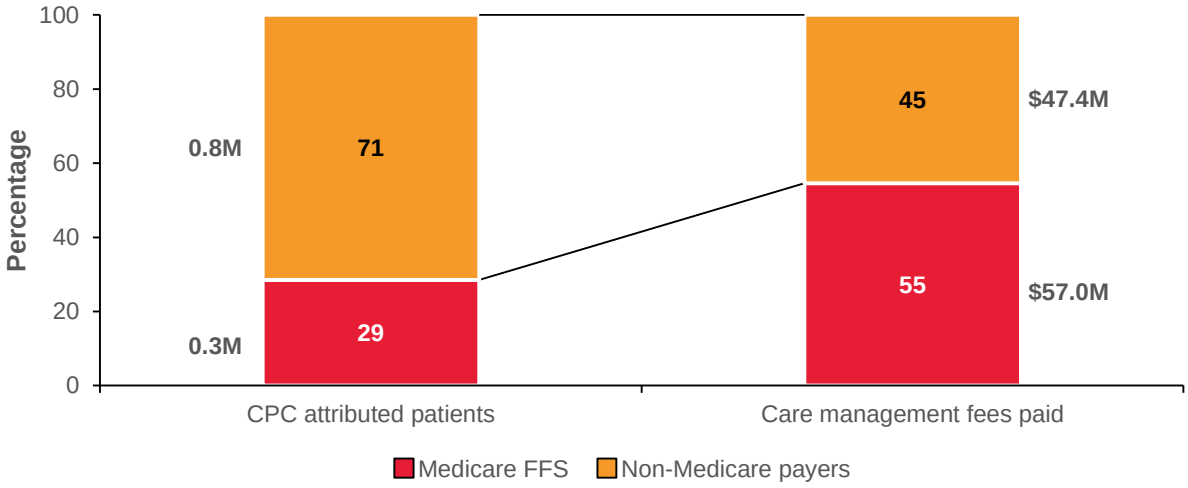
Source: Mathematica analysis of PY2013 budget data. Bland and Associates analysis of PY2014 and PY2015 budget data.

Notes: Total CPC payments vary across regions and overtime due to a combination of factors including the number of participating payers and practices in a region, the number of lives attributed to CPC practices, and the level of payers' PMPM payments. Reported differences between years should be interpreted with caution, given this analysis was based on practice-reported data and there were slight differences in the methods underlying the calculation of these statistics. Medicare FFS payments in PY2013 were higher than in PY2014 and PY2015, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

CMS paid risk-based care management fees for each Medicare beneficiary attributed to a CPC practice, in addition to FFS payments for regular services and CPC care management fees for Medicaid FFS beneficiaries in four regions. For CPC's first two years, CMS care management fees averaged $20 (with fee levels of $8, $11, $21, and $40 depending on the beneficiary's risk score). Starting in January 2015, CMS reduced the average payment to $15 (with fee levels of $6, $8, $16, and $30 depending on risk score). The fee level was based on the patient's hierarchical condition category (HCC) score (a measure of risk for subsequent expenditures calculated annually by CMS for each beneficiary attributed to a CPC practice); by design, half of the total funding in each region are for attributed beneficiaries in the highest HCC risk quartile.[30]

In PY2015, CPC care management fees for Medicare FFS patients totaled $57 million, comprising 55 percent of total CPC care management fees to practices (Figure 3.2). Reflecting the decrease in PBPM payments in January 2015 from $20 to $15 PBPM, the cumulative payments for PY2015 were lower than the payments in PY2014 ($76.1 million) and PY2013 ($90.5 million).[31] For PY2015, Medicare FFS payments ranged from $7.3 million in New York to $9.1 million in Oregon (Figure 3.1).

Figure 3.2. CPC attributed patients and care management fees paid, for Medicare FFS and non-Medicare payers



Source: Bland and Associates analysis of PY2015 budget data as reported by participating practices.

[30] Pope G.C., J. Kautter, R.P. Ellis, et al. "Risk adjustment of Medicare capitation payments using the CMS-HCC model." *Health Care Financing Review*, vol. 25, 2004, pp. 119–141

[31] Medicare FFS payments in PY2013 were higher than in PY2014 and PY2015, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

All but one of the non-Medicare FFS payers used PMPM payments for their enhanced CPC payments to practices; rates vary considerably by line of business (Table 3.1).[32] Most of these 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. Unlike Medicare FFS, 73 percent of other payers did not reduce their PMPM payments for PY2015 (Figure 3.3). Moreover, one regional Medicaid managed care organization doubled its CPC payments as part of a corporatewide strategy to use alternate payment strategies to shift additional resources to primary care. The 27 percent of payers that decided to decrease their PMPM payments made reductions ranging from 19 to 35 percent of their prior year's payment, similar to Medicare's 25 percent reduction.

Table 3.1. Range of CPC participating payers' PMPM payments for PY2015

Payer type	PMPM range
Medicare FFS	Average PBPM is $15 ($6/$8/$16/$30 depending on HCC risk score)
Medicare Advantage	$4–$30
Commercial, third-party administrator, administrative services only	$2–$28
Medicaid managed care	$2–$15
Medicaid FFS and CHIP	$3–$15

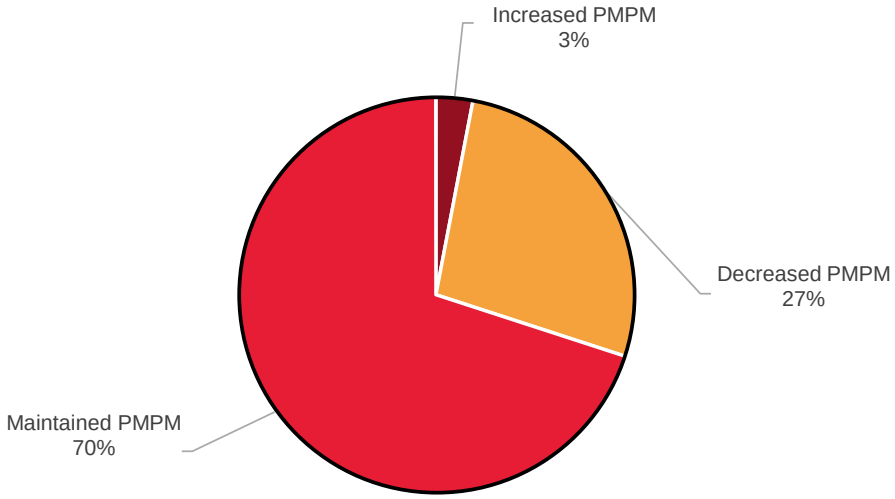
Source: Payer-provided preinterview worksheets and payer interviews.

Note: In PY2015, 47 percent of non-CMS payers risk-adjusted their CPC PMPM payments to practices.

CHIP = Children's Health Insurance Program; FFS = fee for service; HCC = hierarchical conditions category; PBPM = per beneficiary per month; PMPM = per member per month.

[32] One regional payer uses an at-risk capitation model instead of providing PMPM payments.

Figure 3.3. 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: This analysis includes 33 payers. 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 a capitation model, and two opted not to participate in interviews. Most payers maintained the same PMPM payment level between PY2013 and PY2014.

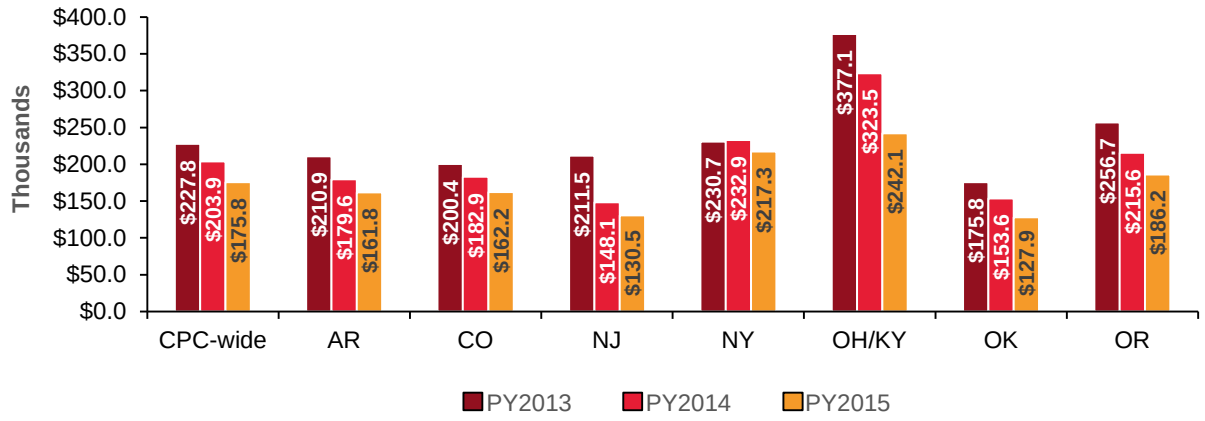
In PY2015, practices reported that non-Medicare FFS payers paid them $47.4 million in CPC care management fees, or about 45 percent of total CPC funds.[33,34] Changes in total payments from non-Medicare FFS payers from PY2014 to PY2015 resulted from a combination of changes in payers' PMPM rates as well as changes in the number of lives payers attributed to CPC practices. For example, in Arkansas, a region in which no payers reduced their PMPM levels, non-Medicare payments increased as one large payer adjusted its methodology to increase the number of patients it attributed to participating practices. In contrast, most payers in New Jersey reduced their PMPM payments and, thus, total payments decreased.

Across payers and regions, practices reported a median decrease in CPC funding of 15 percent from PY2014 to PY2015. Despite this decrease, CPC practices continued to report receiving sizable care management fees from CMS and other participating payers. Practices reported receiving a median of $8.02 per attributed patient per month, or $3.27 per active patient per month. This finding translated to median of $175,775 per practice ($51,286 per clinician) in CPC care management fees, which averaged 12.5 percent of 2015 total practice revenue for CPC practices. The median CPC payments per practice ranged from $127,901 in Oklahoma to $242,101 in the Ohio/Kentucky region (Figure 3.4). The median payments per clinician ranged from $24,985 in Oregon to $68,053 in the Ohio/Kentucky region (Figure 3.5).

[33]We include PMPM payments for Medicaid FFS patients in non-Medicare funding, even though CMS paid care management fees for these beneficiaries in the four regions in which Medicaid provides CPC funding to practices.

[34] These statistics are based on Bland and Associates' analysis of practice-reported budget data.

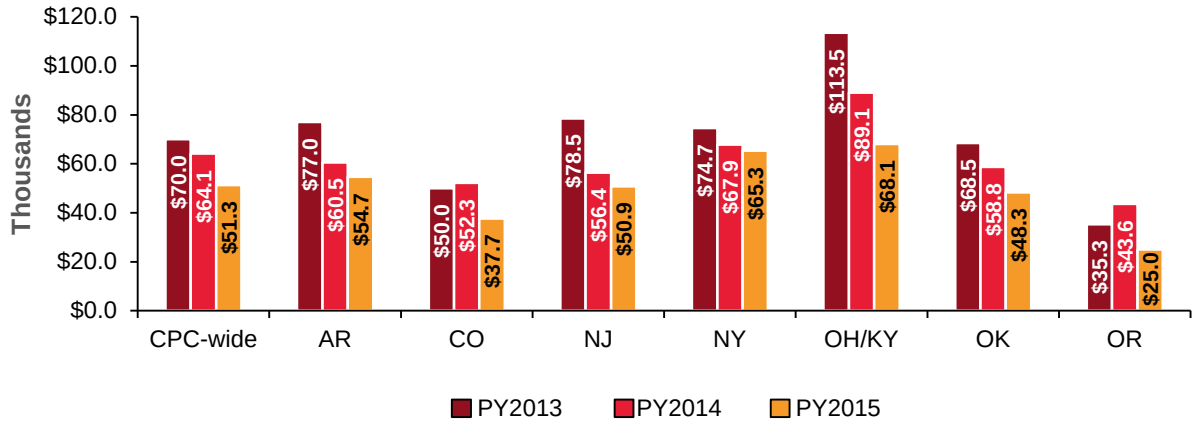
Figure 3.4. Median CPC funding per practice, CPC-wide and by region, for PY2013, PY2014, and PY2015



Source: Mathematica analysis of PY2013 budget data. Bland and Associates analysis of PY2014 and PY2015 budget data.

Note: This analysis is based on practice-reported data. Reported differences between years should be interpreted with caution, given slight differences in the methods underlying the calculation of these statistics. Medicare FFS payments in PY2013 were higher than in PY2014 and PY2015, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

Figure 3.5. Median CPC funding per clinician, CPC-wide and by region, for PY2013, PY2014, and PY2015



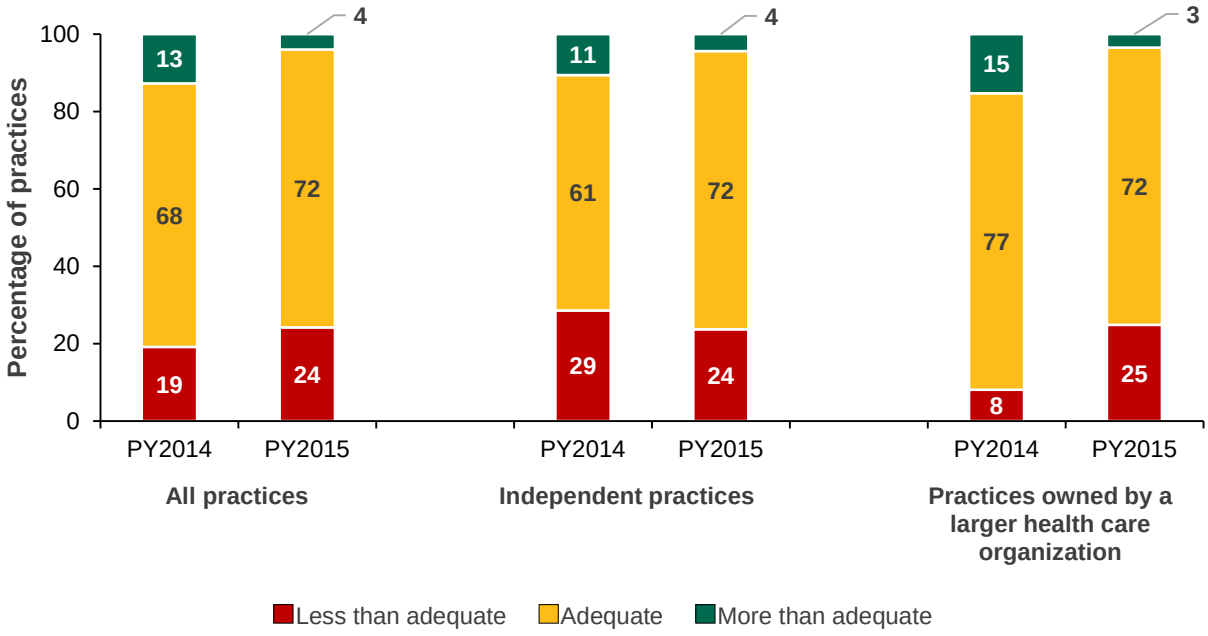
Source: Mathematica analysis of PY2013 budget data. Bland and Associates analysis of PY2014 and PY2015 budget data.

Note: This analysis is based on practice-reported data. Reported differences between years should be interpreted with caution, given slight differences in the methods underlying the calculation of these statistics. Medicare FFS payments in PY2013 were higher than in PY2014 and PY2015, because PY2013 included several months of CMS payments in late 2012. CMS defines CPC's first program year (PY2013) as October 2012 through December 2013. CMS began making CPC care management payments in October 2012 for the Arkansas and Oklahoma regions, and in November 2012 for all other regions. Other participating payers began making such payments on or before February 1, 2013.

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

Practices generally perceived Medicare FFS care management fees to be adequate relative to the costs of implementing CPC, even following the decrease in care management fees (Figure 3.6). In the 2015 practice survey, 76 percent of practices reported that Medicare FFS care management fees were adequate (72 percent) or more than adequate (4 percent). Although practices owned by a larger health care organization were more likely to perceive fees as adequate or more than adequate than their independent counterparts in PY2014, this difference was no longer observed in PY2015. The percentage of practices owned by a larger health care organization that perceived Medicare FFS care management fees to be adequate decreased from 92 percent in PY2014 to 75 percent in PY2015. This finding may in part reflect the larger decrease in CPC payments per practice and per active life reported by practices owned by a larger health care organization than independent practices. Practices' ratings of the adequacy of other participating payers' care management payments varied greatly among regions and payers but were generally slightly lower than their ratings of adequacy for Medicare payments.

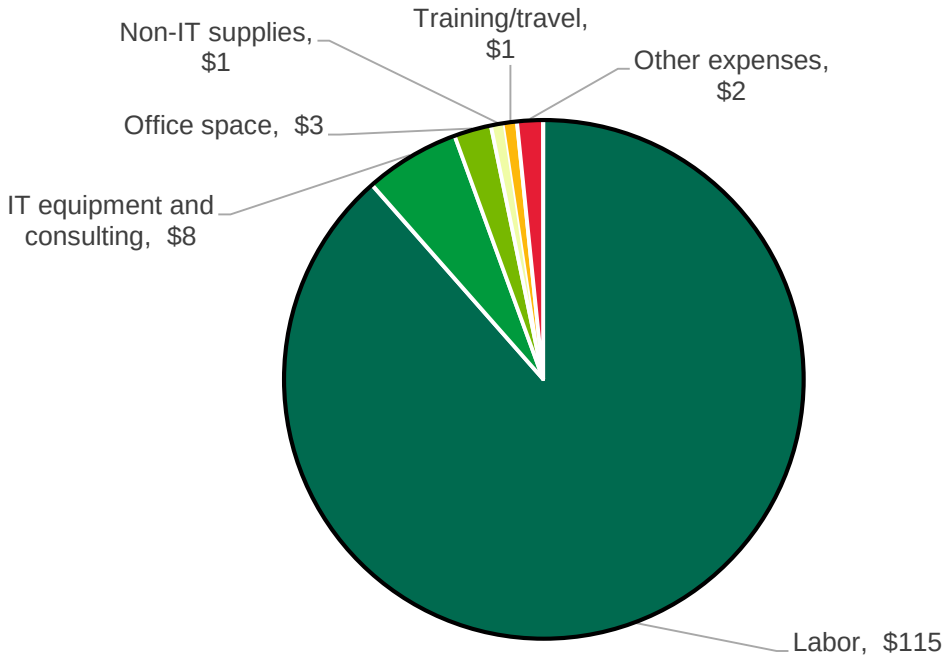
Figure 3.6. Practices perceived adequacy of Medicare FFS care management fees relative to the costs of implementing CPC in PY2014 and PY2015



Source: CPC practice survey, administered April through July 2014 and April through August 2015.

Practices reported using CPC care management fees to support a variety of labor and nonlabor costs. As in PY2014, labor costs were the largest area of spending, accounting for about $114.9 million, or about 90 percent of practice-reported CPC spending in PY2015 (Figure 3.7). The largest categories of labor costs were physicians ($32.3 million), care managers ($17.3 million), and registered nurses ($13.2 million). After labor, practices reported spending the most CPC funding on information technology (IT) equipment or consulting ($7.7 million). Practices also used CPC funding for non-IT equipment, office space, and training or travel.

Figure 3.7. Practice-reported CPC spending across regions for selected cost categories, in millions



Source: Bland and Associates analysis of PY2015 budget data.
IT = information technology.

3.2.3. CMS and many other payers provide practices with an opportunity for shared savings

In addition to CPC care management fees, Medicare and other participating payers also provide participating practices the opportunity to share in savings in the total costs of care during the last three years of the initiative. Payers share with practices a portion of savings accrued during 2014, 2015, and 2016 approximately 6 to 12 months after the end of each calendar year.

CMS announced the results of its shared savings calculations for PY2015 performance in October 2016 (Table 3.2). CMS found that CPC generated savings for PY2015 in four regions—Arkansas, Colorado, Oklahoma, and Oregon. Across the four regions, CMS paid $13.1 million in shared savings payments to 240 practices that met the quality thresholds required for shared savings eligibility (93 percent of all CPC practices in those regions). This is considerably larger than the PY2014 Medicare shared savings of $658,129 that CMS paid to 56 practices in Oklahoma, the only region that CMS estimated to have generated net savings for that performance year. In contrast, CMS found that the three other regions—New York, New Jersey, and Ohio/Kentucky—increased actual expenditures relative to expected expenditures in 2015.

Table 3.2. Results from CPC Medicare FFS shared savings calculations for performance in 2015, by region

	Gross Savings[a]		Net Savings[a]		Shared Savings Payments	
	Percent	Total dollars	Percent	Total dollars	Number of eligible practices[b]	Average payment per practice
AR	4.3	$20,558,907	2.4	$11,509,173	56	$13,376
CO	4.1	$18,035,916	2.2	$9,386,590	66	$7,094
NJ	-4.1	-$20,169,532	-5.7	-$28,028,730	58	$0
NY	-3.4	-$13,875,569	-5.3	-$21,302,941	70	$0
OH/KY	-0.4	-$1,676,182	-2.2	-$9,552,508	73	$0
OK	7.1	$32,988,549	5.4	$25,005,049	52	$208,909
OR	4.4	$21,875,754	2.6	$12,762,842	66	$15,783

Source: CMS CPC 2015 Shared Savings & Quality Results

[a] Gross savings do not take into account the $15 PBPM that Medicare paid CPC practices in PY2015; net savings do account for those fees. A positive value for gross or net savings indicates savings as compared to relative trended targets; a negative value indicates losses relative to trended targets.

[b] To qualify to share in any Medicare FFS savings achieved in PY2014, practices had to reach a minimum number of quality points earned by surpassing national benchmarks on claims-based measures (calculated at the regional level) and patient experience measures (calculated at the practice level) as well as reporting at least nine eCQMs.

CMS's shared savings calculations serve a different purpose than the evaluation and, as such, use a different approach. [35] Shared savings is intended to provide practices alternative payment separate from FFS revenue. For shared savings, CMS contractor Actuarial Research Corporation (ARC) compares CPC attributed beneficiaries' actual expenditures to an actuarial target spending level based on baseline spending of a reference population of other beneficiaries in the region, trended forward from 2012 to the performance year. In contrast, the evaluation is intended to assess the impact of CPC. The impact estimates by Mathematica compare the change in expenditures between the year before CPC began (October 2011through September 2012) and the first three years of CPC operations (October 2012 through September 2015) for beneficiaries attributed to CPC practices in the region relative to beneficiaries in matched comparison practices. Because of the differences in the comparison strategy and, to a lesser extent, the time periods, different evaluation and shared savings results are not uncommon. Unlike the shared savings calculations, the evaluation results indicate that, in 2015, none of the regions generated statistically significant net savings, and Ohio/Kentucky increased costs, after accounting for the care management fees.

About two-thirds of other payers offered practices the opportunity to share in savings achieved for PY2015. The following payers did not participate in shared savings for the 2015 performance year: one national payer operating in multiple regions, seven commercial regional payers, and Medicaid FFS in three regions. The national payer and one of the larger regional payers not offering shared savings are providing practices other incentive payments under their proprietary programs, such as pay-for-performance programs or risk-based capitation.

[35] For more information on CPC's shared savings methodology, see https://innovation.cms.gov/Files/x/Comprehensive-Primary-Care-Initiative-Shared-Savings-Methodology-PDF.pdf.

At the time of our summer 2016 interviews, only five non-Medicare payers had completed their shared savings calculations for PY2015. Among those payers, two payers in Oregon and one in Colorado found CPC generated savings in PY2015 for at least one line of business or group of practices. For PY2014 performance, eighteen non-CMS payers reported results: two payers each in Colorado, Ohio, and Oklahoma/Kentucky, as well as one payer each in Arkansas and Oregon, found CPC to generate savings.

Payers' shared savings methodologies differ along several dimensions (Table 3.3).[36] Whereas some payers had to design their own approach to CPC shared savings, many payers (including both national and regional payers) used design elements from their existing shared savings programs. In the text box below, we describe several key elements of shared savings approaches payers. (See Peikes et al. 2016 for a detailed description of Medicare's shared savings approach.)

Table 3.3. CPC shared savings methodologies among participating payers

		Other participating payers	
	Medicare FFS uses design feature?	Number of payers reporting on design feature[a]	Percentage using design feature, among those reporting
Level of savings calculation			
Regional[b]	X	23	61%
Practice or groups of affiliated practices		23	39%
Groups of unaffiliated practices		23	26%
Adjustments to savings calculations			
Excludes high cost outliers		18	83%
Adjusts for population risk	X	16	81%
Minimum savings rate to achieve shared savings	X (>1%)	19	32%
Maximum percentage of total dollar savings shared with practices			
Up to 35%		15	33%
Up to 50%	X	15	60%
Up to 70%		15	7%
Care management PMPM payments netted out of shared savings calculation (or incorporated into expenditures)	X	15	67%
Factors used to determine proportion of pooled practices' savings that a given practice is eligible to receive[c]			
Number of attributed patients	X	16	100%
Acuity of attributed patients	X	16	56%
Metrics used to determine whether practices will receive share of savings or the proportion of savings they receive			
CMS's CPC metrics and national benchmarks	X	16	50%
Other quality or efficiency metrics		16	50%

[a] As of summer 2015, some payers were still designing components of their shared savings methodologies. Each table row indicates the number of payers that had finalized design decisions for a given feature. Payers operating in more than one region are counted multiple times, once for each region in which they participate.

[b] That is, all CPC practices with which the payer has attributed lives. Payers calculating savings at the regional level include payers doing so separately by line of business.

[c] Excludes payers that are calculating savings at only the practice level.

[36] As of summer 2015, some payers offering shared savings were still designing components of their shared savings methodologies. Our analysis includes only payers that had finalized design decisions for a given feature.

Key elements of payers' shared savings approaches

Level at which savings is calculated. To calculate savings, CPC payers typically either (1) combine all CPC practices for which a payer has attributed lives, or (2) combine certain practices, such as all those participating from a single health system/medical group or from a virtual group of unaffiliated practices. Following Medicare's lead, 61 percent of non-Medicare payers used a regional approach in 2015. Some of these payers, however, pulled out one to two large group practices (that is, those with very large numbers of attributed lives in CPC, such as 5,000 or more) from the regional pool and calculated savings separately for each of these groups—in addition to the regional calculation for all other CPC practices.

Many CPC payers that are combining groups of practices, as opposed to taking a regional approach, referenced their use of thresholds of 5,000, 7,500, or even 10,000 patients to produce reliable estimates of costs (because smaller groups show considerable volatility). Except in the case of large systems/medical groups, this method often requires combining nonaffiliated practices into a virtual group for performance purposes. Although a few payers noted that nonaffiliated practices are increasingly willing to participate in this approach—recognizing that virtual combining is necessary as payers become more focused on value-based purchasing—another payer reported mixed success with this approach, noting that these practice groups have worked best when a few leading practices organized the rest of the practices.

Adjustments and exclusions. To account for practices who see higher (or lower) risk patients, most CPC payers adjust their shared savings calculations. Most commonly, payers use risk and case-mix adjustment (81 percent of payers who reported on their shared savings approach) and exclude high-cost outliers, such as patients with more than $250,000 in costs in the performance year (83 percent of payers).

Use of savings corridors. Only a few CPC payers vary the amount of savings shared by the percentage of total costs saved. Perhaps most notably, Medicare increases the percentage shared as savings increase, as follows:

- For savings of more than 1 percent and less than 2.3 percent, 10 percent of savings is shared
- For savings of 2.3 to 3.5 percent, 10 percent is shared on savings between 1 and 2.3 percent, plus 30 percent is shared on savings between 2.3 and 3.5 percent
- For savings of more than 3.5 percent, 50 percent of savings is shared

Two other non-Medicare payers reported using savings corridors. One payer varies the percentage shared based on historical cost performance; that is, practices with historically high costs receive a lower percentage of any savings, and practices with historically low costs receive a higher percentage.

Use of minimum savings rates, maximum percentage of savings shared, and caps on total savings distributions. Medicare and one-third of non-Medicare payers that reported on their approach set minimum savings rates necessary to achieve shared savings that range from 0.5 to 3 percent. In addition, the maximum percentage of savings that payers plan to share with practices ranged from 20 to 70 percent, with the most common maximum being 50 percent. A small number of payers indicated they plan to place caps (or maximums) on the total dollar value of shared savings distributions, and described these caps in a variety of ways, such as 10 percent of total costs or, in another case, $4 per member per month.

Use of quality gates to determine a practice's eligibility for shared savings distributions. To qualify to share in any Medicare FFS savings achieved in PY2014, practices had to reach a minimum number of quality points earned by surpassing national benchmarks on claims-based measures (calculated at the regional level) and patient experience measures (calculated at the practice level) as well as reporting at least nine eCQMs.[a] At the time of our 2015 interviews, a number of non-Medicare payers planned to use the same quality metrics and benchmarks as CMS to reduce provider burden. In addition, a few payers require that a practice be in good standing on CPC Milestones (that is, not on corrective action) to be eligible for a savings distribution.

Key elements (continued)

Use of quality ladders to determine size of a practice's shared savings distributions. Some non-Medicare payers plan to use quality ladders—adjusting the size of a practice's shared savings distribution based on its quality. (Medicare does not use quality ladders for CPC but does require a minimum quality score to be eligible for shared savings.) Although many payers were still working out the details at the time of our 2015 interviews, at least five payers suggested they may adjust the percentage of savings shared based on a practice's quality performance.

Allocation of savings in pooled arrangements. If practices are combined into groups or pooled for the region as a whole for purposes of shared savings, payers need to determine how to allocate savings across all eligible practices. All CPC payers that reported on how they are allocating savings indicated that they are using the number of attributed patients. Medicare and more than half of non-Medicare payers also consider the acuity of attributed patients at a practice.

[a] CMS required practices to report 9 out of 11 eCQMs in PY2014 and 9 out of 13 in PY2015. Measure reporting, instead of measure performance, was used to determine practices' eligibility for shared savings distributions for savings achieved in PY2014.

3.3. Data feedback provided to 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 with 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 practice-level feedback and patient-level data files from Medicare and other payers are meant to be used with the larger universe of data available to practices (including their own electronic health record data).

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

Since April 2013, CMS has provided practices with access to quarterly Medicare FFS practice-level feedback 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 with other CPC practices in their region. Practices can download the practice-level report and patient-level data files from the CPC web application. The first annual report provided details on the Medicare FFS report content (Taylor et al. 2015).

In PY2015, nearly 90 percent of non-Medicare payers also provided data feedback to practices, an increase from the first two years of the initiative during which about two-thirds of payers did so.[37] Payers used different approaches to provide feedback to practices in PY2015 (Table 3.4). Specifically:

[37] Payers operating in more than one region are counted multiple times, once for each region in which they participate. This analysis includes 36 payers; it excludes one payer that opted not to participate in interviews.

- **Twenty-two payers across all regions provided practices with individual payer feedback.** The content and structure of this feedback was designed by a single-payer organization. As of summer 2015, individual payers' reports primarily contained measures of cost and service utilization and, to a lesser degree, quality performance (such as rates of colorectal cancer screening and childhood immunizations). Some payers also provided practices lists of high utilizers or patients that are due for certain services (such as breast cancer screening).

- **Payers in three regions continued providing practices feedback reports aligned in terms of content, structure, or both.** In PY2014, payers in Arkansas, Ohio/Kentucky, and Oregon developed and started sending practices aligned feedback reports (Table 3.5). All Arkansas payers continued to produce these reports in PY2015, and three Arkansas payers began providing practices aligned patient-level data files. In contrast, several payers in Oregon and Ohio/Kentucky stopped producing aligned reports either due to technical difficulties producing them or in anticipation of releasing aggregated reports.

- **Payers in three regions took steps toward data aggregation, in which a third party produces a single report that aggregates payers' claims data.** Aggregated data are intended to allow practices to better understand their overall performance on cost, quality, and use measures; identify opportunities for improvement in the care delivery process; and actively use data to guide their interactions with individual patients. Additionally, data aggregation reduces the time practices spend sorting through individual reports from multiple payers. In PY2015, payers in Colorado and Oklahoma started producing aggregated reports; payers in Ohio/Kentucky released their first aggregated reports in January 2016 (see below for additional information on the data-aggregation process and report content).

Table 3.4. Payer approaches to data feedback in PY2015, by region

	Percentage of payers providing feedback to practices	Number of payers providing each type of feedback[a]		
		Individual[b]	Aligned[c]	Aggregated[d]
All regions	89 (31 of 35[e])	22	12	10
Arkansas	100 (4 of 4)	1	4	Not produced
Colorado	89 (8 of 9[f])	8	Not produced	7
New York	100 (4 of 4)	4	Not produced	Not produced
New Jersey	100 (3 of 3[e])	3	Not produced	Not produced
Ohio/Kentucky	86 (6 of 7[e])	2	5	Not produced in 2015[g]
Oklahoma	100 (3 of 3)	2	Not produced	3
Oregon	60 (3 of 5)	2	3	Not produced

Source: Interviews with payers.

[a] Some payers provide more than one type of feedback.

[b] Payers design and produce reports for their individual organization.

[c] Payers aligned the content and/or structure of their reports. Each payer sends out the report. Payers in Arkansas, Ohio/Kentucky, and Oregon produced these reports in PY2015.

[d] Payers contract with a vendor to produce a single report that aggregates data on cost and service utilization measures. Payers in Colorado and Oklahoma produced these reports in PY2015.

[e] One payer each in New Jersey and Ohio/Kentucky did not participate in an interview and is excluded from the analysis.

[f] This count of payers reflects the numbers at the time Colorado first implemented data aggregation. In December 2015, one of the small payers withdrew from CPC, so six of the eight non-CMS payers are now participating in data aggregation.

[g] Payers released the first aggregated report for the Ohio/Kentucky region in January 2016. All eight payers are participating.

Table 3.5. Content and structure of aligned feedback reports in Arkansas, Ohio/Kentucky, and Oregon, PY2015

Region	Start date	Frequency	Type of measures included	Common set of measures	Measures specifications aligned	Report format aligned	Patient-level data aligned
Arkansas	Fall 2014	Quarterly	Cost and utilization	Yes	Yes	No	Yes
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 2015.

Given the considerable progress on data aggregation made in three CPC regions in PY2015, we provide additional details on these activities below.

In 2015, payers in Colorado, Ohio/Kentucky, and Oklahoma spent considerable time and resources developing a data-aggregation approach. Each region has followed its own path to claims data aggregation, adjusting its approach as payers, practices, and vendors negotiated priorities and costs. All three regions selected a vendor to aggregate the data, have a governance structure in place, and have determined the initial content of the unified report. However, the level of detail in the reports, the quality measures reported, participation among payers, the financing structure, and the timing of the release of the aggregated reports vary across regions (see Tables 3.6 and 3.7).

- **Colorado** launched its online tool in June 2015. It allows practices to drill down in aggregated patient-level data to produce reports on, for instance, subpopulations of patients (for example, patients with COPD and two or more ED visits in the past year) as well as the services delivered to their patients by other providers. Seven of the Colorado's nine payers participated, financing 100 percent of the costs. Colorado is the only region in which payers selected a vendor that did not also function as the multistakeholder faculty. Payers worked with the vendor and RLF to coordinate practice education about the tool. Vendor support to practices was disrupted when Best Doctors acquired the vendor, Rise Health, late in 2015.

- **Ohio/Kentucky** made rapid progress in 2015 and planned to release detailed patient-level reports to practices at the beginning of 2016. As in Colorado, the Ohio/Kentucky reports will allow practices to produce lists of patients who may be high cost or high risk. Ohio/Kentucky is notable among CPC regions for having all payers participate in data aggregation and for practices financing 50 percent of the cost. On-site practice trainings were expected to begin in early 2016.

- **Oklahoma** launched an interactive tool in 2015 that combines data from quarterly payer reports (including Medicare) to provide insight into practice-level performance. Although this level of data provides practices a sense of how each practice compares with other practices and their performance trends over time, it does not allow practices to identify patients who, for example, have care gaps or specific service use patterns, as is possible in the other two regions pursuing data aggregation. However, MyHealth, Oklahoma's data aggregation vendor, does make patient-level clinical data available through its role as the region's health information exchange.

In reflecting on the progress they had made in 2015, payers and stakeholders in the three regions reported taking several steps to improve the utility of their aggregated data. First, the vendors focused on improving the accuracy in the aggregated reports, addressing data inconsistencies that arose when pooling across payers, and enhancing drill-down capabilities. Second, CMS made significant progress toward its goal of including Medicare claims data in the aggregated reports. In June 2015, CMS issued an RFP to the vendors already selected by the other participating payers in the three regions. By the end of 2015, CMS had contracted with the vendors and was pursuing data use agreements with practices and the data aggregation vendors in preparation for providing Medicare claims data to the vendors in 2016.

Although payers were universally enthusiastic at the prospect of including Medicare data in the aggregated reports, several indicated that sustainability of their investment in data aggregation was a concern. Specifically, several expressed concern that given that data aggregation reports were not available until the last year or two of CPC, any evaluation of their effectiveness would likely be inconclusive. A few payers expressed pressure to demonstrate a return on investment (ROI), noting that it was difficult to justify continued investment if an ROI was not evident in the near term. Payers also expressed the need to explore longer-term support for data aggregation beyond CPC. For example, Colorado planned to leverage its State Innovation Model (SIM) grant to continue the investment that payers have made in data aggregation under CPC.

Table 3.6. Features of the management infrastructure for data aggregation in CPC regions pursuing data aggregation

	Colorado	Ohio/Kentucky	Oklahoma
Data aggregation vendor			
Selected data aggregator	Best Doctors (originally Rise Health, which Best Doctors acquired)	HealthBridge and OnPoint	MyHealth Access Network and Verinovum
Organization type	Data technology and analytics firm (for profit)	HealthBridge: Health Information Exchange (nonprofit) OnPoint: Payer Claims Data Warehouse (nonprofit)	Health information exchange and a voluntary all-payer claims database (nonprofit)
Date of vendor selection	First quarter of 2014	Third quarter of 2014	Fall 2012 (at outset of CPC)
Date when aggregated data first shared with practices	June 2015	January 2016	Early 2015
Financing and governance structure			
Participating non-Medicare payers	Seven of nine payers[a]	Eight of eight payers	Three of three payers
Allocation of data aggregation costs	100 percent payers, based on their proportion of total attributed patients[b]	50 percent payers, 50 percent practices, with each payer paying based on its proportion of total attributed patients to make up half, and practices doing the same[c]	100 percent payers based on their proportion of total attributed patients

Table 3.6. *(continued)*

	Colorado	Ohio/Kentucky	Oklahoma
Governance structure	Data governance panel, composed of payers participating in data aggregation; meets monthly to provide management and operational guidance and oversight. Data work group, composed of payers and practice leadership as well as other stakeholders as needed; meets monthly to provide direction on data sharing, reporting, and use of the tool.	Data work group, composed of payers, practices, and data aggregators; meets monthly to discuss project timelines, data submission, and aggregated report formats.	Data aggregation issues discussed at three types of meetings: - MyHealth clinical quality meetings, held monthly and attended by payers, health systems and community organizations - CPC payer meetings, held monthly and attended by CPC payers - Multistakeholder meetings, held quarterly and attended by CPC payers, systems, and community organizations

[a] Count reflects the numbers at the time Colorado first implemented data aggregation. In January 2016, one of the small payers withdrew from CPC, so six of the eight non-CMS payers are now participating in data aggregation.

[b] Colorado Medicaid is not directly paying for data aggregation but is contributing toward other general CPC project management costs.

[c] One practice in Ohio/Kentucky is not contributing toward data aggregation efforts.

Table 3.7. Features of aggregated reports to practices in CPC regions pursuing data aggregation

	Colorado	Ohio/ Kentucky	Oklahoma
Practice report structure			
Data source	Claims[a]	Claims	Practice-level data reported by payers to practices quarterly
Frequency with which data are updated	Quarterly	Quarterly	Quarterly
Approximate data lag (relative to release of each aggregated report)	Three to six months	Eight months	Six months
Distribution method	Interactive portal	Excel 2013 Power Pivot	Interactive portal
Practice's performance can be displayed:			
Patient level	Yes	Yes	No[b]
Physician level	Yes	Yes	No
Practice level	Yes	Yes	Yes
Across multiple sites in a single practice or system	Yes	Yes	Yes
Payer level	Yes	Yes	Yes
Benchmarks of performance			
Aggregated regional performance	Yes	Yes	Yes
Performance of other individual practices (with practices agreeing to share unblinded data)	No	No	Yes
Practice report content and measures			
Risk adjustment performed by vendor[c]	No	Yes	No
Cost and use measures[d]	- Cost includes PMPM, spending by service, by risk category, by condition - Utilization includes admissions, readmissions, specialist visits, number of prescriptions - Lists of patients with high spending or service use are provided	- Cost includes per member per year (PMPY), spending by service, by risk category - Utilization includes admissions, inpatient days, readmissions, specialist visits, ED visits, PCP visits - Lists of patients with high spending or service use are provided	- Cost includes PMPM, spending by service[e] - Utilization includes admissions and readmissions

Table 3.7. *(continued)*

	Colorado	Ohio/ Kentucky	Oklahoma
Quality measures	- Breast cancer screening - Asthma in adolescents - Comprehensive diabetes care	- Low back pain - Avoidable chronic obstructive pulmonary disease (COPD) admissions - Avoidable congestive heart failure (CHF) admissions - Avoidable chronic disease admissions (Prevention quality indicator composite)	- None[f]
Other measures and information	- Includes detailed claims information so that practices can identify other clinicians who have delivered services to their patients - Provides measures of the amount of care an attributed patient receives from the clinician and practice	- Includes list of patients recently hospitalized or with an ED visit, the principal diagnosis, date of service, and name of the hospital	- None
Training to practices			
Training provided to practices on use of aggregated data	Payers, RLF, and Rise Health representatives coordinated practice education, which included webinars and in-person meetings	Group learning sessions and on-site practice support will be provided	Individual training by MyHealth staff

[a] Colorado payers are submitting data either directly to Best Doctors or through the Colorado All Payer Claims Database, administered by the Center for Improving Value in Health Care (CIVHC).

[b] Oklahoma practices have access to patient-level clinical data through MyHealth in its role as the regional health information exchange (HIE). Oklahoma payers noted that they will work to aggregate patient level data for CPC practices once they receive Medicare claims data.

[c] In Colorado and Oklahoma, the vendor normalizes the risk scores from each payer so that practices are roughly comparable to each other but urges caution in making comparisons.

[d] For this table, we report admissions and readmissions as utilization measures.

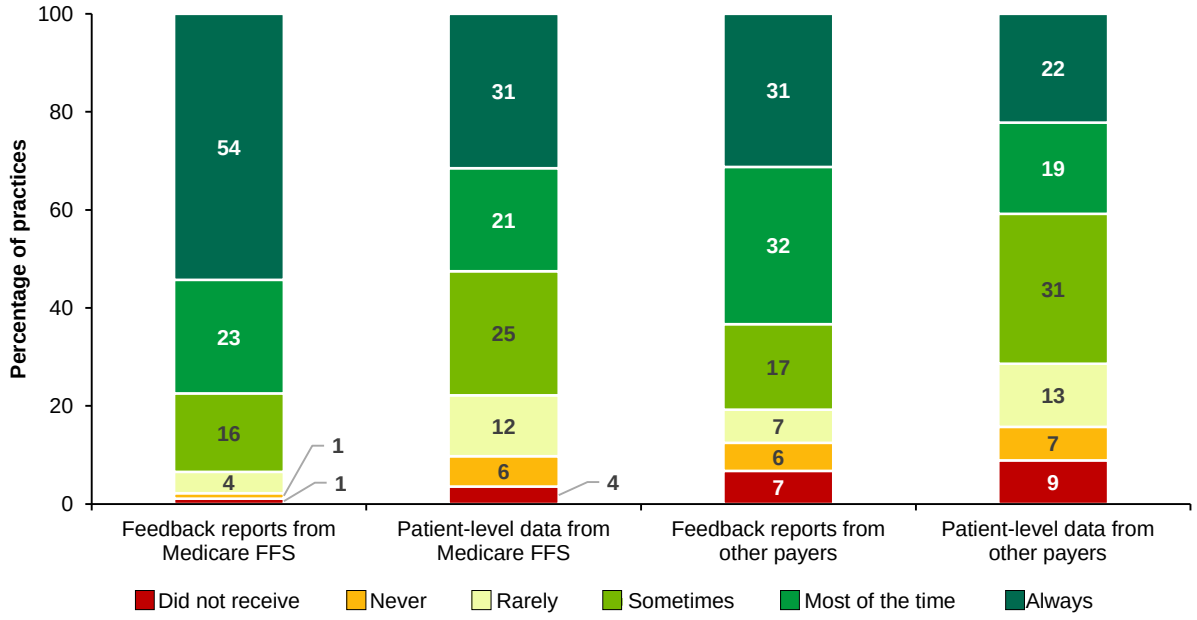
[e] One payer is not currently sharing its cost data with MyHealth.

[f] Outside of data aggregation, MyHealth works with practices to collect clinical data to report electronic clinical quality measures (eCQMs). In addition, MyHealth plans to use aggregated claims data to report admissions for COPD, asthma, and CHF and both an unadjusted and adjusted all-cause readmission rate once it receives Medicare claims data.

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

Most practices or their larger health care organization frequently review practice-level feedback from Medicare FFS and other payers. In the 2015 CPC practice survey, almost all practices reported that they had seen practice-level Medicare FFS feedback reports (98 percent); about three-quarters (77 percent) of practices indicated they reviewed these reports most or all of the time (Figure 3.8). As in PY2014, practices were less likely to frequently review Medicare FFS patient-level data files. Although 90 percent of practices reported reviewing these files, only half of practices (53 percent) reported that they frequently did so. Following a similar pattern, practices were more likely to report frequently reviewing feedback reports (63 percent) from non-Medicare payers than patient-level data files (41 percent).

Figure 3.8. How often practices report reviewing feedback reports and patient-level data files from CMS and other participating payers



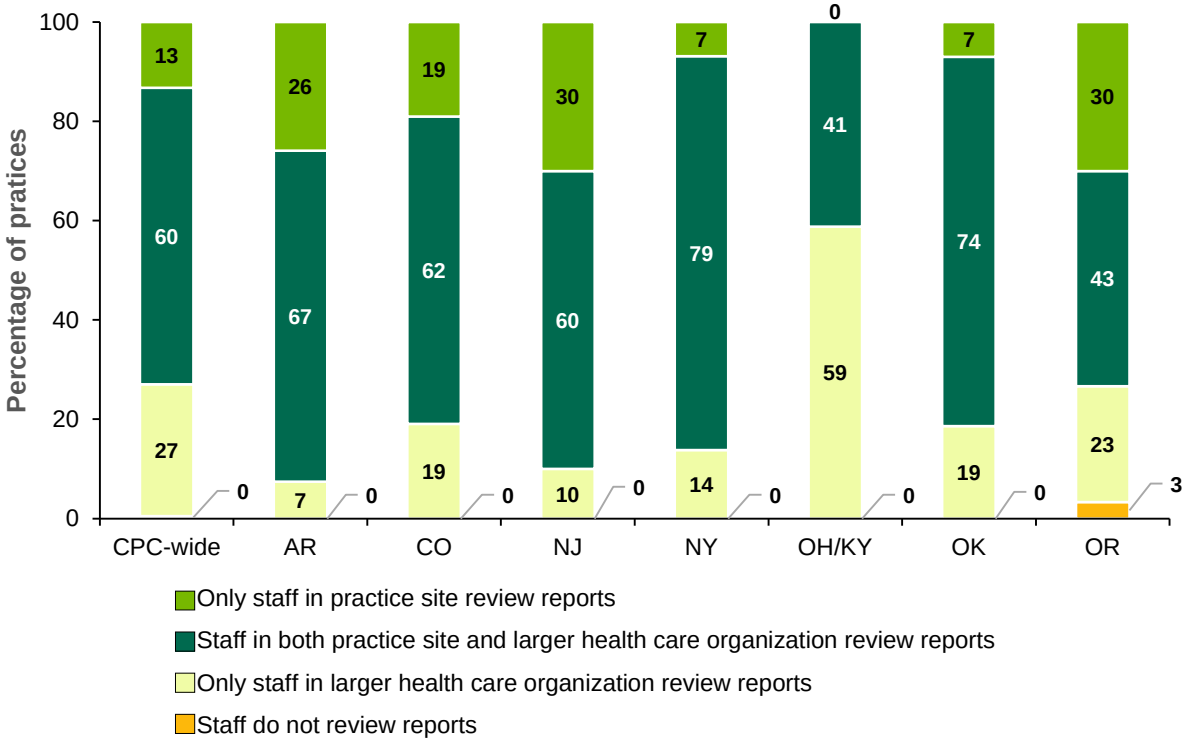
Source: CPC practice survey, administered April through August 2015.

Note: A response of "did not receive" could mean either that the report or data file was not available or that the respondent was unaware of it. 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 owned by a larger health care organization indicated that practice-level staff review feedback reports. About three-quarters of these practices indicated in the 2015 practice survey that a practice-level staff member reviews feedback reports either as the sole reviewer (13 percent) or with staff at their larger health care organization (60 percent) (Figure 3.9). The remaining practices reported CPC data feedback reports and files are not reviewed by individual practice staff. In interviews with a few large health care organizations in each region, some respondents reported analyzing data from feedback reports and patient-level data files and

then communicating important findings (such as high-cost areas) to practices. In other cases, the information is not always shared with practice staff.

Figure 3.9. 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 April through July 2015.

Notes: Analysis limited to practices owned by a larger health care organization. Practices owned by a larger health care organization include practices where the clinicians are employed by or the practice is owned by a group or staff model HMO, hospital, hospital system, or medical school. Some columns do not add up to 100 percent due to rounding.

The percentage of practices reviewing reports varied widely across regions (Table 3.8). As expected, regional differences exist in how practices view and use non-Medicare feedback. This finding is not surprising, given the wide variation in report availability and content across payers. 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, 90 percent of practices in Oklahoma report reviewing Medicare FFS feedback reports all or most of the time, compared with about half of practices in Oregon. This finding suggests that other regional variations—such as levels of health system ownership, analytic capabilities, and support from regional learning faculty—may contribute to regional variation in report use. For example, Oregon practices' relatively low use of Medicare FFS data may be partially explained by the relatively low percentage of Oregon

practices that reported interacting at least monthly with their RLF—who often review Medicare FFS reports with practices.[38]

Table 3.8. Practices' use of feedback reports and patient-level data files in 2015, CPC-wide and by region (percentage of practices)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Percentage of practices that reported receiving and reviewing reports most or all of the time								
Medicare FFS feedback reports	77	74	81	83	72	85	90	53
Medicare FFS patient-level data files	53	59	65	50	43	44	64	46
Other payer feedback reports	63	49	63	66	60	75	82	44
Other payer patient-level data files	41	34	41	47	49	38	48	28

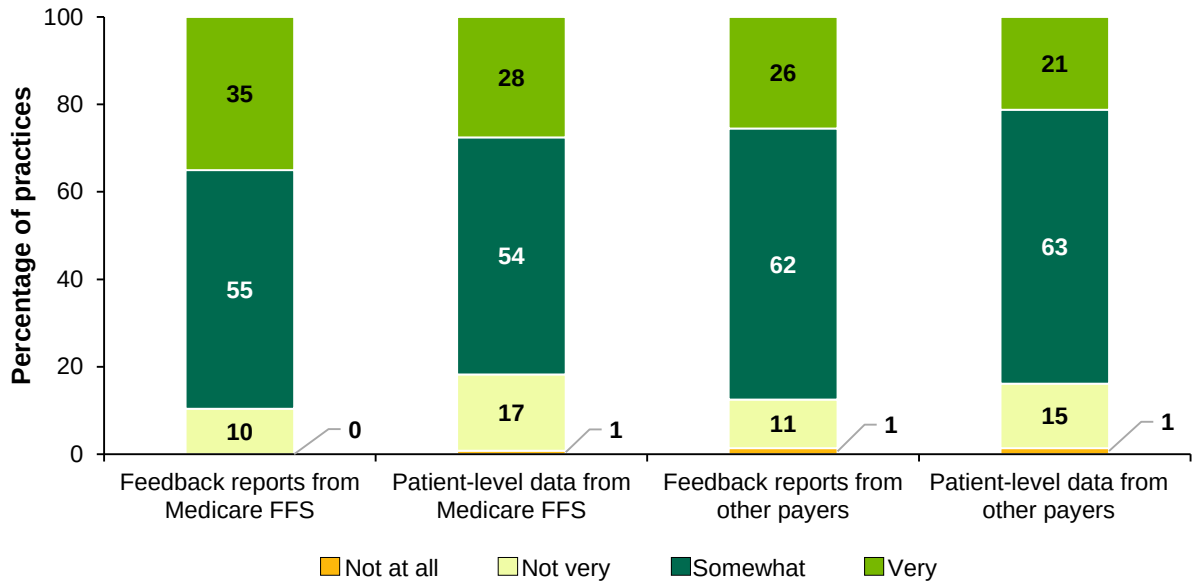
Source: CPC practice survey administered April through August 2015

FFS = fee for service.

Practices found feedback reports and patient-level data files useful, but also suggested ways to improve them. More than 80 percent of practices that reviewed feedback from Medicare FFS or other payers reported the information was somewhat or very useful in meeting CPC Milestones and improving primary care (Figure 3.10). The percentage of practices reporting that data feedback is very useful increased between PY2014 and PY2015 for each type of feedback (Figure 3.11). Similarly, the percentage of practices reviewing each type of data feedback appears to be increasing. Most notably, the percentage of practices frequently reviewing other payers' feedback reports increased from 73 percent in PY2014 to 88 percent in PY2015.

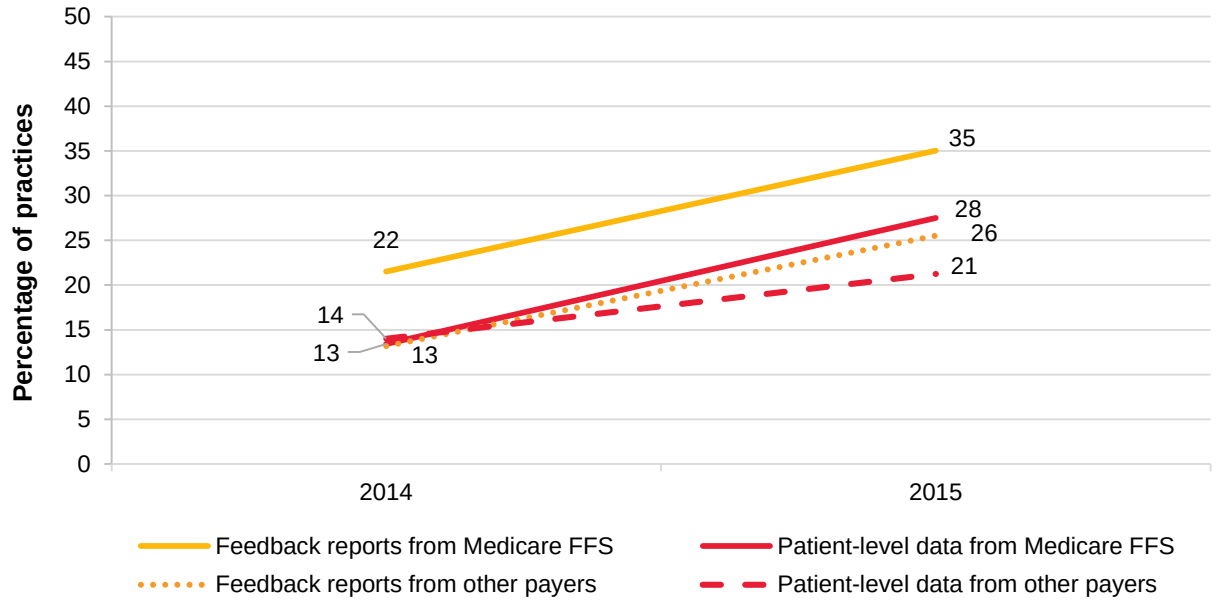
[38] In Oregon, 59 percent of practices report interacting with RLF at least monthly. The percentage of practices interacting with RLF at least monthly in other regions ranged from 73 percent in Ohio/Kentucky to 99 percent in Colorado.

Figure 3.10. Practices' reported usefulness of data feedback for meeting CPC Milestones and improving primary care



Source: CPC practice survey administered April through August 2015.
Note: Analysis includes only practices who reported reviewing the reports.
FFS = fee for service.

Figure 3.11. Practices reporting that data feedback is very useful for meeting CPC Milestones and improving primary care



Source: CPC practice surveys administered April through July 2014 and April through August 2015.
FFS = fee for service.

A combination of factors may have contributed to these encouraging trends. First, in PY2015, Medicare FFS refined the guidelines for Milestone 5: Quality improvement. Specifically, CMS required practices to "review quarterly at least one payer data feedback report (CMS Practice Feedback Report, other payers' data reports, or an aggregated report where available) to identify a high cost area and practice strategy to reduce cost in this area while maintaining or improving quality." Second, CMS and its learning contractor (and its subcontractors) worked with practices during PY2014 and PY2015 to educate them on the existence of various reports and how to use them.

Finally, as described above, payers took steps to improve their feedback reports and to align them across payers. For example, Oklahoma payers started providing practices aggregated data feedback early in 2015. In Oklahoma, from PY2014 to PY2015, the percentage of practices that reviewed other payers' feedback reports all or most of the time increased from 20 percent to 48 percent. Additionally, the percentage of practices in Oklahoma who found these reports very useful increased from 6 percent in PY2014 to 43 percent in PY2015. A similar trend was observed in Arkansas corresponding with payers' release of aligned patient-level data files. Specifically, 78 percent of practices reported frequently reviewing patient-level data files in PY2015, compared with 47 percent in PY2014. Among practices that reviewed these files, 15 percent found them very useful in PY2015, compared with 8 percent in PY2014.

However, opportunities remain for improving the usefulness of payer feedback. Some practice members in the practices selected for intensive study over the course of CPC—which we refer to as "deep-dive" practices—as well as RLF identified several limitations to using the feedback for quality-improvement activities, including reports that represented small numbers of patients, the time lag for claims included in the reports, and concerns that improvement on many outcomes depended on changes from specialists, hospitals, and patients. Additionally, many deep-dive practice members reported ongoing difficulty accessing and using data to support quality improvement, given limited resources and technology support to download patient-level data in some practices, and the time lag for claims-based feedback. (Chapter 5 provides additional detail on how deep-dive practices used feedback reports to drive quality improvement and their challenges in doing so).

3.4. Learning support provided to CPC practices

In addition to the care management payments, shared savings opportunities, and data feedback reports that CMS and other payers provided to practices, CMS provided participating practices with learning support. CMS, working with TMF, the prime learning contractor, and its RLF subcontractors, developed a comprehensive learning infrastructure that incorporates group learning sessions, individualized practice coaching, and peer-to-peer learning (Table 3.9).[39]

[39] RLF are organizations under contract with TMF to provide learning support and assistance to practices in each of CPC's seven regions.

In the sections that follow, we first describe CPC's learning supports overall (including how these supports changed in PY2015) and practices' and payers' general perceptions of these supports. We then detail each of the following modes of learning:

- All-day learning sessions
- Web-based learning sessions
- Individual practice coaching and facilitation
- CPC collaboration site/CPC Connect

For each mode, we also discuss participation and provide information on ratings or perceptions of each mode's usefulness. We then briefly describe additional learning support that individual payers provide to CPC practices. Throughout these sections, we rely on data from the CPC practice survey, interviews with selected CPC practices, and interviews with payers and RLF.

Table 3.9. Description of CPC learning support

Learning activity	Description	Purpose
Cross-regional		
National webinars	CMS and TMF host webinars for all CPC practices	• Educate practices on CPC requirements • Share information on CPC Milestones that are challenging across regions • Highlight exemplary practices to encourage cross-regional learning
Action groups (later evolved to rapid-cycle action groups)	TMF or RLF host quarterly Milestone-focused webinars for practices 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 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
CPC collaboration site/CPC Connect[a]	CMS, TMF, and RLF monitor 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
Regional		
All-day in-person learning sessions	RLF host biannual 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

Table 3.9. *(continued)*

Learning activity	Description	Purpose
Regional webinars	RLF host one-hour 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
Virtual learning session	RLF host two-hour webinars for practices in their region, biannually	• Permit a "deep-dive" into particular Milestone or practice transformation topics • Share information and best practices tailored to regional needs and context
Office-hour sessions	RLF host virtual office-hour sessions for practices in their respective regions	• 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

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

[a] CPC Connect replaced the CPC collaboration site in fall 2015.

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

CMS designed CPC learning support to help practices achieve CPC aims and meet CPC Milestone targets. In the third year of the initiative, CMS and its contractors continued to offer learning activities similar to those offered in PY2014, including all-day learning sessions, webinars, action groups, EHR affinity groups, office-hour sessions, and, for some practices, individualized practice coaching. Additionally, across these activities, CMS continued to prioritize interactive, peer-to-peer learning over didactic instruction.

In summer 2015, CMS introduced two structural changes to existing learning support (see Box 3.1): (1) practices, rather than RLF, began to facilitate some EHR affinity groups, and (2) to promote action-oriented learning, CMS replaced the original action groups (hereafter referred to as "Milestone action groups") with "rapid-cycle" action groups. In contrast to Milestone action groups (which involved web-based learning sessions focused on a particular Milestone), rapid-cycle action groups focus on narrowly defined Milestone-related topics using a miniseries format.

Box 3.1. Changes in CPC learning in 2015

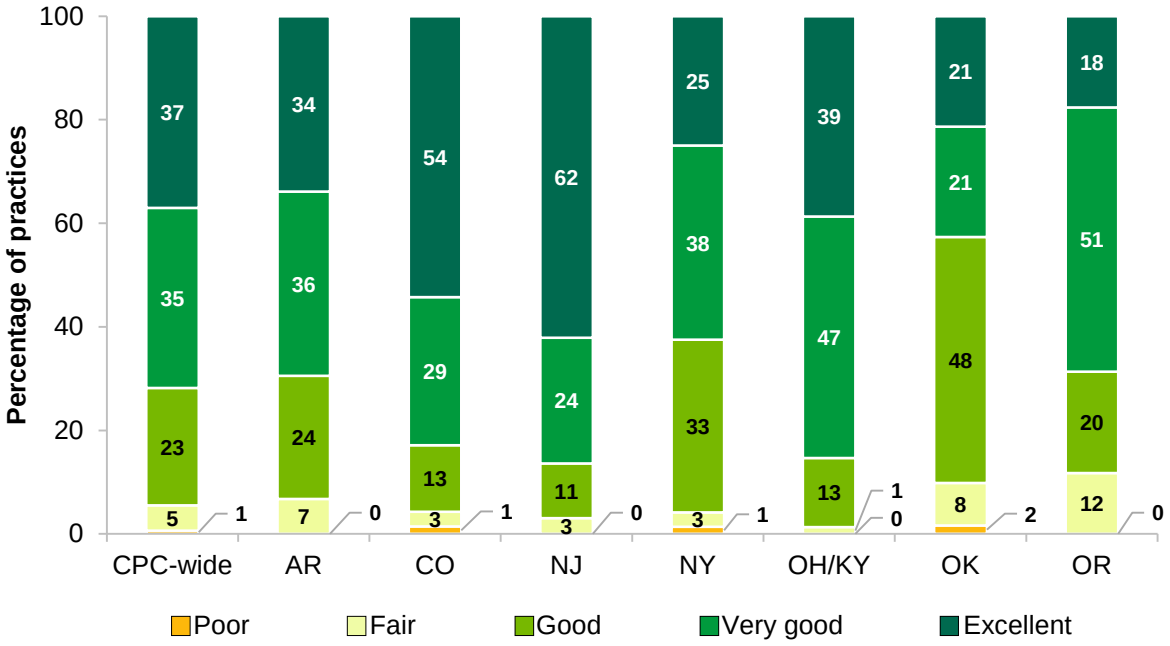
- Rapid-cycle action groups replaced action groups in September 2015.
- Practices, rather than RLF, began to facilitate some EHR affinity groups starting in summer 2015.
- National webinars continued to decline in frequency, partially replaced by action groups and rapid-cycle action groups.

3.4.1. Practices are generally 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 PY2015, practices were required to (1) attend each virtual and all-day learning session, (2) regularly attend the Milestone action group associated with their chosen advanced primary care management strategy for Milestone 2 or participate in a rapid-cycle action group, and (3) communicate with regional learning faculty regarding their progress on meeting Milestone requirements.

In general, practices are satisfied with the learning support they receive. In the 2015 CPC practice survey, at least 43 percent of practices in every region said their RLF provided excellent or very good quality services in meeting their CPC-related needs (Figure 3.12). In particular, practices in Colorado, New Jersey, and Ohio/Kentucky reported receiving very high quality learning support; at least 83 percent of practices in each region rated their RLF as very good or excellent. On the other hand, in Oklahoma, only 43 percent of practices rated the quality of services as very good or excellent. The decline in the share of practices giving this rating (from 60 percent in the 2014 CPC practice survey) may reflect the transition in RLF contractor (and the resulting change in learning faculty staff) that was ongoing in Oklahoma around the time the survey was fielded in 2015.

Figure 3.12. Percentage of practices rating their RLF as excellent, very good, good, fair, or poor in meeting their CPC-related needs, in 2015



Source: CPC practice surveys administered from April through August 2015.

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 most New Jersey practices. (After mid-May 2015, TransforMED no longer provided learning support in the region.)

RLF = regional learning faculty.

In general, payers remained convinced of the value of learning support for the practices and are pleased with the quality of the learning support that practices received. Like in PY2014, payers in nearly all regions indicated the learning activities added value to the initiative and perceived all-day learning sessions and individual practice coaching to be the most beneficial types of activities for practices. A few payers in some regions, however, worried about the effectiveness of virtual group learning activities or about the time burden on practices of attending a large number of learning activities.

> "The learning activities that have been supplied to the practices in Oklahoma in the last year have been very good. I think that the type of learning is not such that can only be done virtually…Some virtual learning is helpful, so that you don't have to take all of the time out to go somewhere to learn. At the same, there are certain things that you really need to be there [in-person]…to be able to acquire."
>
> *—Oklahoma payer*

RLF in a few regions expressed concerns about the design of CPC learning support. Faculty in two regions noted that practices wished to learn directly from experts and faculty on particular topics, and one of these RLF felt that the learning curriculum's emphasis on peer-to-peer learning prevented it from accommodating these requests. Additionally, some RLF indicated that the heterogeneity of CPC practices posed challenges in planning learning activities. For example, RLF in one region noted that learning activities were not differentiated enough to meet the needs of both advanced and struggling practices. RLF in another region remarked on the challenge of identifying practices to serve as panelists on web-based learning activities.

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

In all regions, RLF hosted two all-day learning sessions in 2015 (Box 3.2).[40] (Each region also held one shorter (two-hour) virtual learning session; see next section.) In CPC's second program year, RLF had held three in-person all-day learning sessions per region.

Box 3.2. CPC all-day learning sessions

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

Responding to feedback from practices from the first program year, and in recognition of practices' expertise on Milestone topics, RLF across regions have continued to transition away from didactic presentations at all-day learning sessions. Instead, learning sessions more frequently feature presentations by practices, panel discussions with patients and payers, and practice discussions (including breakout groups of practices focusing on a particular topic). In the third program year, learning sessions also often emphasized the use of data for practice improvement. In several regions, including Oklahoma and Colorado, RLF gave a presentation on Medicare feedback report data or aggregation vendors demonstrated their products. RLF in some regions also highlighted practice variation in

[40] Both Front Range and Western Slope practices attended the first PY2015 Colorado all-day learning session. HealthTeamWorks and Rocky Mountain Health Plans hosted the second all-day learning sessions separately for practices in the Front Range and Western Slope, respectively.

outcomes by sharing unblinded practice-level results. For example, at learning sessions in Arkansas, RLF announced practices that showed continued improvement on particular metrics, to promote networking between strong performing practices and weaker performers.

Many payers are engaged in all-day learning sessions. In Oklahoma, through the field service team, payers worked closely with RLF to craft meeting agendas for the all-day learning sessions. In many other regions, including Arkansas, New Jersey, and Ohio/Kentucky, payers participated as presenters in all-day learning sessions. In some regions, including Arkansas and New York, payers and stakeholders highlighted the value of these meetings for facilitating communication between the payers and practices, on topics such as common challenges faced by practices and payer feedback reports. Multistakeholder faculty in one region noted, "[When] the payers and the practices are actually in the same room, grappling with the same thing…the practices can see that the payers aren't just big bad guys that want to take away their money, and the payers can see, 'Oh, these people aren't just out to get every penny that they can.'"

All-day learning sessions continued to be well-received and well-attended. In the 2015 CPC practice survey, at least 79 percent of practices in each region rated all-day learning sessions as "very useful" or "somewhat useful." Deep-dive practice members reported valuing in-person learning activities for sharing real-life challenges, successes, and lessons learned with peers, which helped generate ideas to test in their own practices. Several deep-dive practice members, moreover, appreciated breakout sessions at in-person learning sessions, which allowed them to speak in depth about a specific topic or with people in similar roles. The in-person interactions facilitated by the learning sessions further boosted morale for several practice members and facilitated camaraderie among practices' care managers. Some deep-dive practices, however, were frustrated that the content presented in learning sessions and webinars was sometimes redundant.

> "This last [in-person learning session breakout]…was wonderful. I felt like we had that interaction with the other care managers. I could see how many patients they were managing, so I knew where I needed to be in order to be compliant with whatever they're doing. And I got ideas on how to make the workflow better. It was great."
>
> *—Care manager in deep-dive practice*

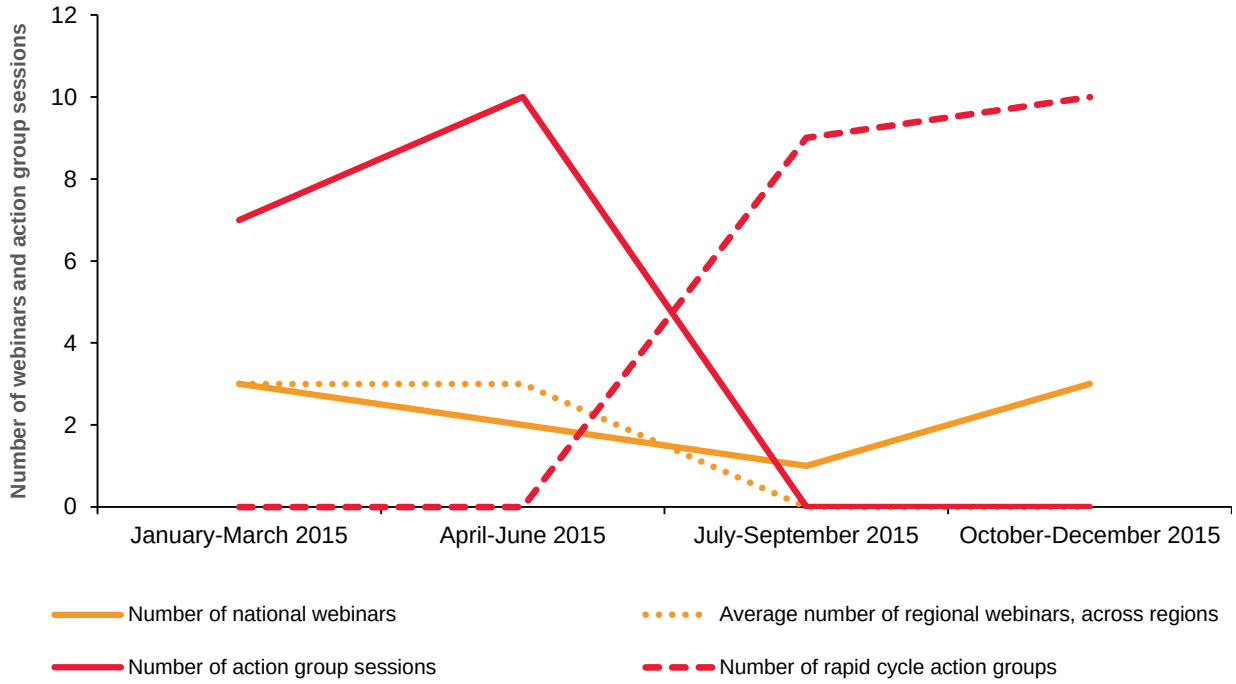
Many payers and stakeholders across most regions had similar positive opinions of the all-day learning sessions, noting in particular the value of in-person networking across the CPC community. Nearly all practices had representatives attend the regional all-day learning sessions, as required by CPC. Average participation in learning sessions was 90 percent or more of practices in each region.

Although most deep-dive practices valued in-person learning sessions, some found the logistics of participation challenging. As in the first two years of CPC, some deep-dive practice members noted challenges with the time required to attend in-person learning sessions, which meant being out of the office and unavailable for patient care. This requirement was particularly burdensome for rural practices, whose staff had to travel long distances to in-person learning sessions. Perhaps in part because of these barriers, in many of the deep-dive practices, nonclinician staff members attended learning sessions in place of clinicians.

3.4.3. Web-based learning sessions continued to be less didactic than the first program year and were increasingly action-oriented

During the first year of the program, CPC learning support focused largely on explaining the model and the requirements for practices. In the second program year, CMS focused learning support on helping practices adopt new strategies and approaches to achieving CPC's aims and, in recognition of practice expertise, aimed to make national and regional web-based learning more interactive and less didactic. CMS maintained this strategy in the third program year and continued its emphasis on using web-based national and regional learning activities for interactive peer-to-peer sharing. As in PY2014, national webinars continued to be held infrequently (Figure 3.13), with the Milestone action groups and EHR groups introduced in PY2014 continuing as the primary venues for practices to share best practices with peers across the initiative and to solve problems together. Moreover, to prioritize action-oriented learning, CMS replaced Milestone action groups with rapid-cycle action groups in September 2015 (Figure 3.13). Rapid-cycle action groups engage practices in implementing small tests of change in narrowly defined Milestone-related areas.

Figure 3.13. Change in number and modality of CPC national and regional web-based learning, January through December 2015



Source: TMF Health Quality Institute, CPC Curriculum, January–June 2015 (report dated May 29, 2015); TMF Health Quality Institute, CPC Curriculum, July–December 2015 (report dated November 27, 2015).

Notes: The seven national webinars presenting region-specific Medicare shared savings results are excluded from the count of national webinars. 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. Seven webinars, jointly hosted in the first, second, and fourth quarters of 2015 for Arkansas and Oklahoma practices, are counted separately for each region.

RLF = regional learning faculty.

Several virtual learning opportunities were available to CPC practices in PY2015:

- **National webinars.** CMS and TMF hosted nine national webinars that covered programmatic topics (including eCQM reporting requirements) and Milestones viewed as challenging across the regions (particularly, risk-stratified care management). Milestone-related webinars usually featured presentations by several CPC practices, allowing practices to learn directly from their peers.

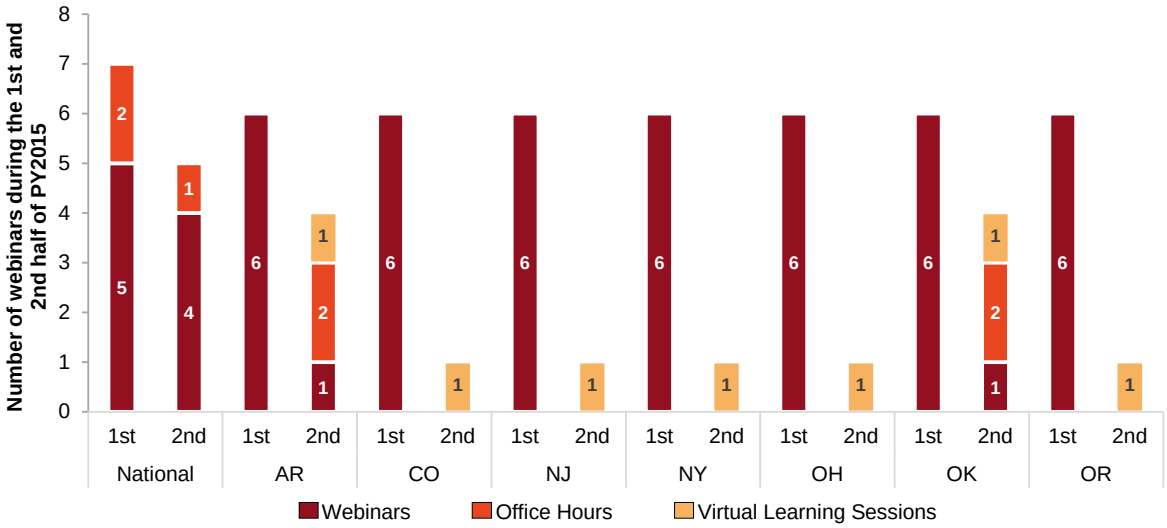
- **Regional web-based learning.** As in PY2015, RLF in each region provided similar quantities and types of web-based learning activities (see Figure 3.14). In all regions, however, the structure of regional learning activities changed markedly between the first and second half of PY2015, as a result of updates to the annual CPC learning contract. In the first two quarters of 2015, each RLF held six webinars in its region, and no RLF hosted an office-hour session. In the second half of 2015, each RLF held one virtual learning session in its region, and only Arkansas and Oklahoma hosted any webinars or office-hour sessions. The content and format for these webinars and office hours was 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. Like the national webinars, regional webinars typically used a format in which one or more practices shared their experiences.

  - **Virtual learning sessions.** TMF and RLF hosted one two-hour virtual learning session in each region, replacing one of the three all-day, in-person learning sessions that TMF and RLF hosted in each region in PY2014.

  - **Regional office hours.** These sessions are intended to be interactive and allow practices to directly engage with CMS staff or their RLF. Perhaps as a reflection of practice familiarity with Milestone topics and program requirements, these sessions were held infrequently in PY2015. Practices could still contact their RLF if they had a question or concern.

Figure 3.14. Number of national and regional webinars, for first half and second half of PY2015



Source: TMF Health Quality Institute, CPC Curriculum, January–June 2015 (report dated May 29, 2015); TMF Health Quality Institute, CPC Curriculum, July–December 2015 (report dated November 27, 2015).

Note: The seven national webinars presenting region-specific Medicare shared savings results are excluded from the count of national webinars. Seven webinars, jointly hosted in the first, second, and fourth quarters of 2015 for Arkansas and Oklahoma practices, are counted separately for each region.

- **Action groups.** Action groups are online, cross-regional communities of practices organized around Milestone-related topics. Web-based meetings, held periodically for each action group, typically included presentations from one or more CPC practices and dedicated time for attendees to ask questions of the practice panelists. Each practice was required to regularly participate in at least one action group.

  - **Milestone action groups.** New in PY2014, Milestone action groups included 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). Until they were replaced by rapid-cycle action groups in September 2015, each Milestone action group held web-based meetings at least quarterly and hosted ongoing online discussion forums, moderated by RLF.

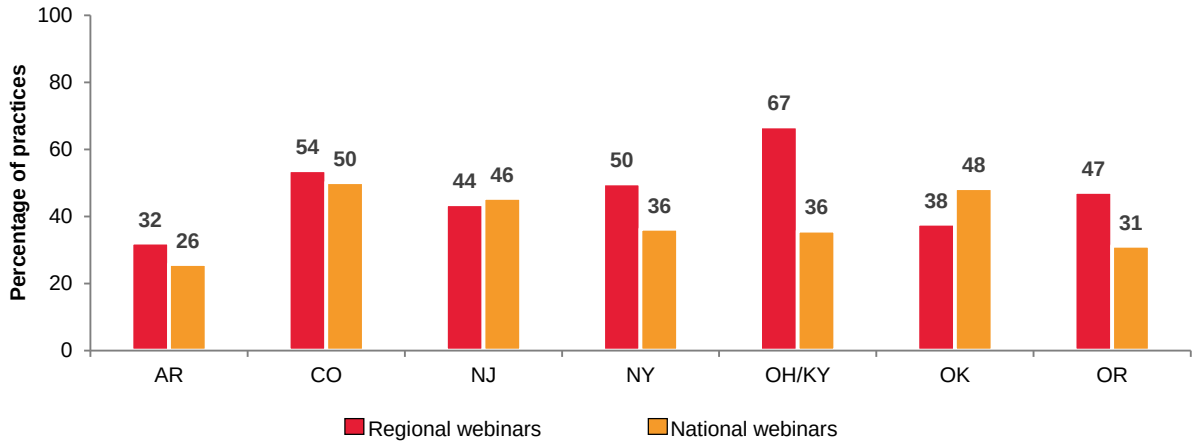
  - **Rapid-cycle action groups.** Rapid-cycle action groups, introduced in September 2015, were moderated by TMF, and were organized into short series of sessions, each focused on a narrowly defined Milestone-related topic. For example, in fall 2015, CMS and TMF offered four sessions each of "Leveraging Your Whole Team to Improve Chronic Disease Management" and "Capturing Opportunities in Transitions of Care." Like Milestone action groups, rapid-cycle action groups emphasize participation in online discussion forums. As part of their participation in these sessions, practices are encouraged to implement small tests of change in their practices in the given Milestone area.

- **EHR affinity groups.** EHR affinity groups, another learning activity introduced in PY2014, provided a problem-solving forum for practices that use the same EHR. There were 13 EHR affinity groups, reflecting the large number of EHR systems used across CPC practices. Beginning in summer 2015, practice representatives, rather than TMF or RLF, facilitated some of these sessions. Practices may participate in these groups through online discussion forums on CPC Connect (formerly the collaboration site) or through approximately quarterly web-based meetings. EHR vendors participated in most affinity groups to answer questions and offer suggestions. These meetings were practice driven; facilitators encouraged practices to share "workarounds" and best practices, but there was generally not a formal presentation planned for the session. Participation in EHR affinity groups is optional, and sessions were generally attended by a small number of practices.

- **Leadership meetings.** Beginning in 2014, quarterly leadership meetings provided an opportunity for practice or health system leadership to discuss shared challenges and to collaborate on projects that benefit the CPC community, such as developing care compact guidelines. Some regions held web-based meetings, and others met in-person. In Oklahoma, rural practices and health system practices participated in separate leadership meetings.

Practices were slightly more likely to attend regional webinars than national webinars in most regions. In PY2015, practice participation in regional and national webinars was optional but encouraged. In almost all regions, practices attended regional webinars at slightly higher rates, on average, than national webinars (Figure 3.15). Most practices attended at least one Milestone 2 action group or rapid-cycle action group session (Figure 3.16).

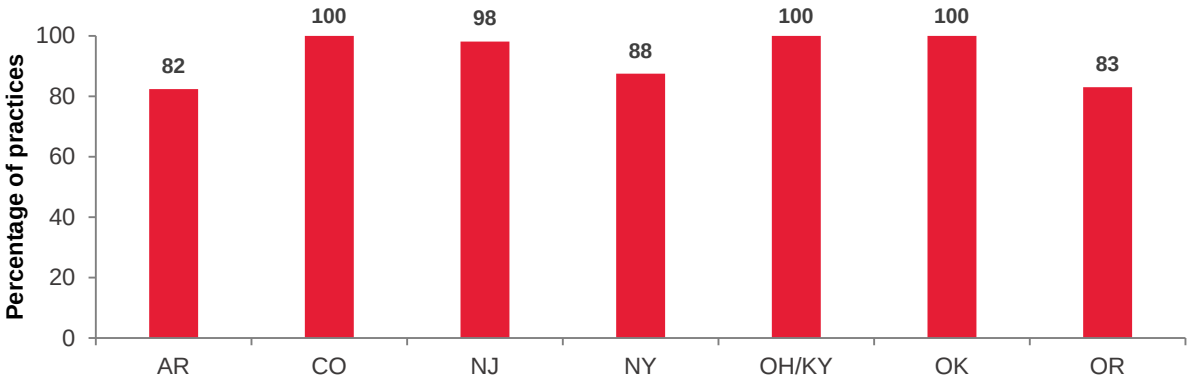
Figure 3.15. Average percentage of practices that participated in regional webinars and national webinars, January through December 2015



Source: Data provided by TMF Health Quality Institute.

Notes: We counted seven webinars, jointly hosted by Arkansas and Oklahoma RLF for practices in their regions, separately for each region. Data on attendance rates were not available for two national webinars, covering the PY2013 CPC evaluation annual report and PY2015 eCQM reporting. TMF Health Quality Institute provided attendance rates for webinars held in the first and second quarters. Mathematica calculated attendance rates for webinars held in the third and fourth quarters, based on lists of practice attendees. Attendance counts exclude records with missing practice identification numbers.

Figure 3.16. Percentage of practices that attended at least one Milestone 2 action group or rapid-cycle action group session, January through December 2015



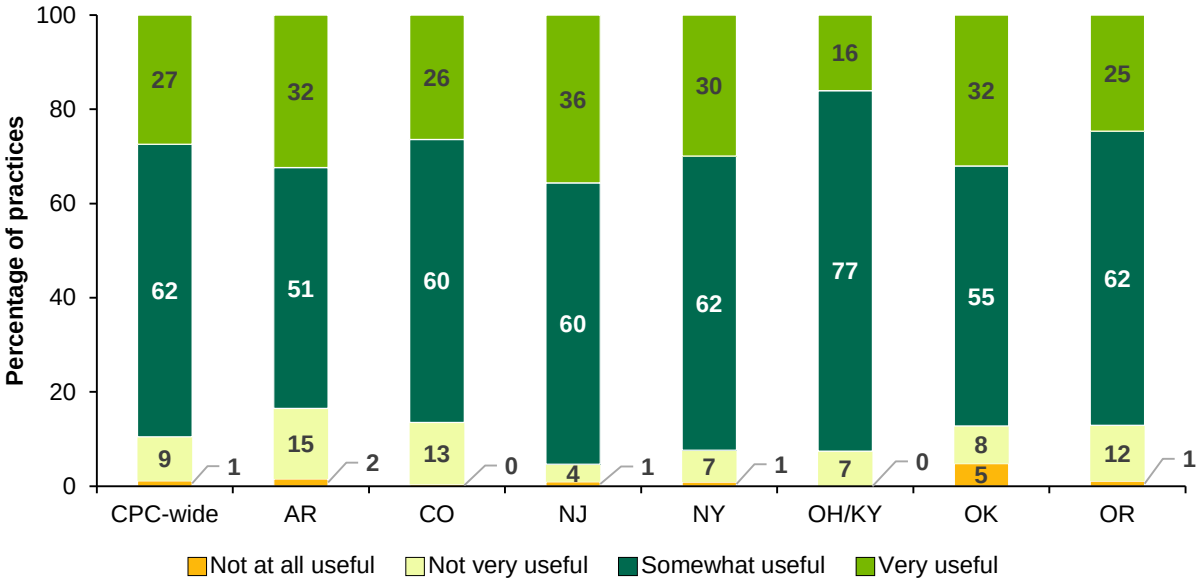
Source: Data provided by TMF Health Quality Institute.

Notes: TMF Health Quality Institute provided counts of practices attending neither a Milestone 2 action group session nor a rapid-cycle action group session. Mathematica calculated the percentages of practices attending at least one action group session, based on the numbers of practices participating in CPC as of December 31, 2015.

Some deep-dive practices saw value in practical web-based learning activities, but some practice members had concerns about web-based learning. Deep-dive practices appreciated web-based learning activities that allowed them to learn from peers in their region or from practices across the CPC national network. They found web-based learning activities were most helpful when they focused on specific topics and resources that could easily be applied to day-to-day work, a model used by the rapid-cycle action groups introduced in September 2015. Several practice members were pleased that the number of webinars required was reduced from the previous year, providing them with more time to focus on the Milestone requirements, but some practice members still expressed concerns with the staff time required to attend web-based learning sessions. A few practice members wished their participation in web-based learning sessions did not have to be in real time to meet CPC requirements.

Feedback from practices on Milestone action groups has been fairly positive. In the 2015 CPC practice survey, 90 percent of practices reported that action groups were very or somewhat useful (Figure 3.17). In New Jersey, New York, and Ohio, the highest share of practices gave favorable ratings to Milestone action groups, on average. Since CMS introduced rapid-cycle action groups after the CPC practice survey was fielded, no survey data are available on practice ratings of rapid-cycle action groups.

Figure 3.17. Practices' average ratings on usefulness of action groups, among those that participated



Source: CPC practice survey, administered April through August 2015.

Notes: Average ratings reflect practice ratings for each of the Milestone 2 action groups, as well as the action groups for Milestones 3, 4, 6, and 7. Ratings for action groups were not available for practices that reported not having attended an action group in the prior six months.

RLF perspectives on action groups were mixed, perhaps in part reflecting differences in the content, structure, or presentation style of different sessions. Some RLF observed strengths of action groups, such as providing a source of content on which to draw when delivering individual coaching to practices and the ability of action groups to support differentiated learning, by allowing practices to connect with others with similar challenges across regions. In contrast, other RLF noted that there was limited practice participation during some of the action group calls and in some of the online forums; others instead observed that, in some sessions, practices submitting written questions had their questions overlooked due to the high volume of real-time, written, electronic "chat" messages that other practices were sending. RLF in one region also expressed a concern that practices participating in multiple Milestone action groups detracted from them making meaningful changes in their practice.

> "I think [EHR affinity groups are] going well, but … there's some frustration on the practice level when the vendor on the call doesn't necessarily have an answer, or know where to get an answer. The other part is when the vendor's just not on the call, you know. It's just kind of this cycle of, "Well, how do we do this? Well, what do we do?" And if nobody has the answer, that issue will…stay on the docket."
>
> *—CPC RLF*

The success of EHR affinity groups has varied by session, based on vendor and practice engagement. A few deep-dive practices noted that EHR affinity groups were helpful in solving health IT issues and sharing tips among practices using the same vendor. RLF in some regions generally agreed, although a few RLF also noted that practices are hesitant to share or lacked the expertise to offer solutions in some sessions. Recognizing these challenges, several RLF indicated that having a knowledgeable, responsive EHR vendor in attendance is key to having an actionable meeting; in at least one case, RLF in one region noted that a sophisticated practice user was able to fill this role.

According to RLF, leadership sessions have had mixed success across regions, and RLF have adapted the design of these groups to respond to regional needs. According to New York RLF, leadership meetings, which have been ongoing since the initial years of CPC, have been successful; members have collaborated on projects such as EHR interoperability across the medical neighborhood and improving interactions between primary care practices and post-acute care providers. Colorado and New Jersey RLF, in contrast, have struggled with low attendance at leadership meetings. In response, Colorado RLF transitioned their leadership group into the Physician Leadership Education Committee, which advises RLF on learning support and has also provided feedback to the leadership of the Colorado State Innovation Model. New Jersey RLF has aimed to leverage the region's active multistakeholder group to boost engagement in its leadership sessions.

3.4.4. The amount of individual practice coaching and facilitation varied across regions; it was primarily used to help struggling practices meet required Milestones

In addition to providing group learning activities, in each program year, CMS allocated limited resources for RLF to provide coaching to individual practices. Individualized practice coaching could include, for example, making an in-person visit to discuss workflows or a telephone call with a practice care manager on risk stratification. To focus this practice coaching, RLF in each region assess practices' progress toward required CPC Milestones and achieving CPC's goals more broadly. In PY2014, faculty in only one region considered Medicare feedback report data to guide the intensity of their interactions with each practice, but across regions in PY2015, RLF commonly used feedback report data and quarterly practice Milestone submissions to do so.

In each region, RLF structured their own approach to practice coaching based on 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 IT infrastructure). In this section, we discuss three key dimensions that characterize RLF practice coaching: (1) content of interactions, (2) intensity of interactions, and (3) level of interaction (health system or practice).

a. Content of individual interactions between RLF and practices

In all regions, RLF are both *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 some regions described virtual "just-in-time support" as a key means of supporting busy practices, with RLF in one region remarking, "The face-to-face stuff is important, but it really has to be on the practices' terms… They're busy seeing patients, and it's great if there's time for us to walk in the door and [an in-person visit] helps us to figure out what they need in terms of support, but we really have to respect their boundaries and what they need to do."

Practice coaching increasingly emphasizes the use of data. In many regions, RLF report using Medicare feedback reports or clinical quality measure data in their interactions with practices by helping them use the reports to identify areas of weak performance and helping practices to develop strategies to address these weaknesses. RLF in several regions, including Arkansas and Oklahoma, support this coaching by repackaging the practice-level data from quarterly Medicare feedback reports into new reports to help make these data more actionable for practices. For example, for system practices, Oklahoma RLF use Medicare feedback reports to produce reports displaying the performance on key metrics of all CPC practices in the system. In New Jersey, RLF host a data transparency group composed of practices who have agreed to de-identify their Medicare practice feedback reports discuss their data. New Jersey RLF staff also analyze practice-level Medicare feedback report data to try to identify regional drivers of strong and weak quality and cost performance.

> "I'll just do different formulas and whatnot with the data [in the Medicare practice feedback report] to kind of show them what they could do if they're so inclined and how to look at it, and then I'll go through the actual report and talk about the things that jump out to me. And we'll look at their trends over time."
>
> *—CPC RLF*

RLF engage with practices around Milestone-related topics, but many interactions between RLF and practices focus on CPC administrative items. Milestone-related RLF interactions with practices focus on risk stratification and care management and using data to guide improvement. For example, practices frequently received coaching on implementing their Milestone 2 advanced primary care strategies and reporting eCQMs. RLF also frequently communicate with practices to send reminders about CPC deadlines, prepare materials for practice presentations on webinars or learning sessions, and clarify Milestone reporting requirements. Moreover, faculty in some regions report spending a large amount of time on administrative tasks, particularly identifying practices to present at learning activities, polishing presentations, or documenting practice attendance at learning sessions, and some perceived some of these activities to provide limited value to the initiative.

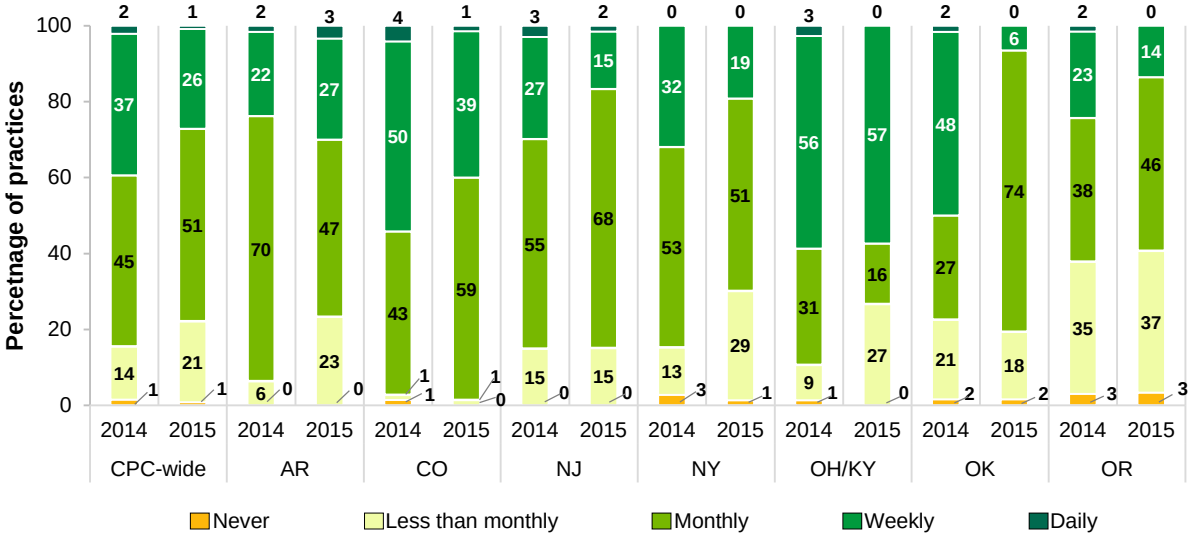
b. Intensity of interaction between RLF and practices

The intensity and type of individual practice coaching varies across region and, within region, by practices' needs. Most practices in each region reported frequent communication with the RLF, although the frequency of communication declined somewhat from 2014 to 2015 in most regions (Figure 3.18). Across all regions except Arkansas, a smaller share of practices in PY2015 than in PY2014 reported at least weekly interactions with the RLF; moreover, in

Arkansas, New Jersey, New York, Ohio, and Oregon, a larger share of practices in PY2015 than in PY2014 reported less than monthly interactions with RLF. The decrease in reported interaction with RLF was particularly significant in Oklahoma, where the share of practices reporting at least weekly contact decreased from 50 percent to 7 percent of practices; meanwhile, the percentage of Oklahoma practices receiving monthly contact increased from 27 percent to 74 percent. As in 2014, the frequency of communication varies widely across the regions, with Colorado and New Jersey practices most often reporting at least monthly communication with RLF, and Oregon and New York practices least often reporting as frequent communication.

Most RLF adjust the intensity of their interactions' with practices depending on practices' progress toward meeting CPC Milestones and their performance on quarterly Medicare feedback reports (Table 3.10). Across all regions, practices that the RLF perceived to be at the highest risk of not filling Milestone requirements receive in-person visits. In most regions, RLF also regularly communicate with moderate risk practices either through in-person visits or over the phone. In most regions, practices that RLF identify as likely to complete all Milestone requirements receive periodic telephone or email check-ins; Colorado and Oklahoma are the only regions in which these practices receive regular in-person visits.

Figure 3.18. Practices' reported frequency of communication with their RLF, by region in 2014 and 2015



Source: CPC practice survey, administered between April and July 2014 and April and August 2015.

Note: Practices were asked about their communication with RLF in the six months prior to the survey fielding. Some columns do not add up to 100 percent due to rounding.

RLF = regional learning faculty.

RLF generally felt that they had the resources they needed to meet the needs of practices. In PY2014, RLF in multiple regions remarked that they would like to have the resources to do additional in-person visits to practices, yet, perhaps as a reflection of practices' progress on Milestone work, few RLF expressed this sentiment in PY2015. As RLF in one region noted, "Some of these practices have matured to a point that it may be that we can [now] space our interactions differently, or at least [space] our face-to-face interactions differently, just

because the practices have perhaps matured to a point [where their needs have changed]." Still, RLF continue to allocate resources to providing in-person visits to practices, sometimes supplementing CPC funding with external funding or relying on staff distributed through the region to make in-person visits to nearby practices.

Table 3.10. RLF reported frequency of in-person visits and telephone calls to practices, by region

	Risk of practice not completing CPC Milestone requirements, as perceived by RLF		
	High	Moderate	Low
Arkansas	Monthly calls or in-person visits	Monthly email check-in; monthly calls by request of practice	Monthly email check-in; monthly calls by request of practice
Colorado[a]	HTW: In-person visits at least twice monthly, and calls as needed RMHP: Twice monthly in-person visits	HTW: In-person visits at least monthly, and calls as needed RMHP: Twice monthly in-person visit	HTW: Monthly or quarterly in-person visits, and calls as needed RMHP: Twice monthly in-person visit
New Jersey	Weekly, biweekly, or monthly calls	Monthly or quarterly calls	Quarterly calls
New York	Frequent calls; in-person visits as needed	Calls as needed	Calls as needed
Ohio/Kentucky	Calls or in-person visits as needed	Calls or in-person visits as needed	Calls or in-person visits as needed
Oklahoma	Frequent in-person visits and calls	Monthly in-person visits	Monthly in-person visits
Oregon	Monthly in-person visits	Quarterly in-person visits or calls	Calls by request of practice

Source: Interviews with RLF conducted by Mathematica.

Notes: Some RLF interactions with practices might reflect interactions with only system-level staff.

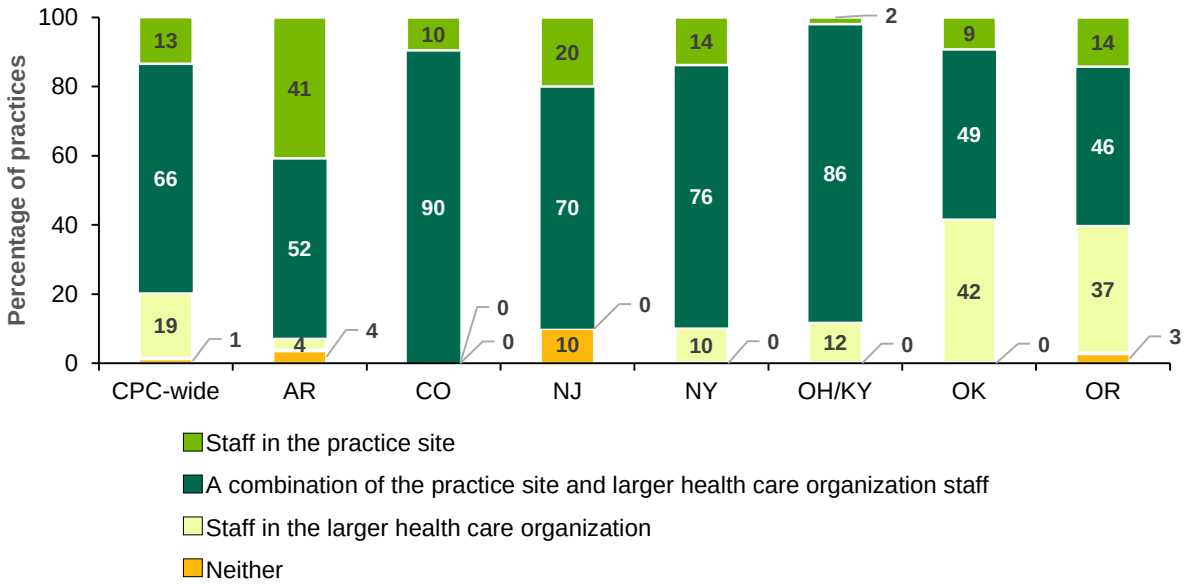
[a] HTW = HealthTeamWorks (serves Front Range region); RMHP = Rocky Mountain Health Plans (serves Western Slope region).

RLF = regional learning faculty.

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

Most practices owned by a larger health care organization report that RLF communicate directly with practice-level staff or with a combination of practice-level staff and system-level staff. In all regions but Oregon and Oklahoma, at least 88 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 3.19).

Figure 3.19. Percentage of practices reporting staff in the practice site or their larger health care organization communicate with RLF, in 2015



Source: CPC practice survey, administered April through August 2015.

Note: Analysis limited to practices owned by a larger health care organization. Practices owned by a larger health care organization include practices where the clinicians are employed by or the practice is owned by a group or staff model HMO, hospital, hospital system, or medical school. 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. Health care organizations often apply CPC processes consistently across all their CPC practices, and therefore, some health care organizations prefer that RLF work with all their practices as a group. RLF in one region noted that this approach is effective, remarking, "We kind of figured out that going into each site [rather than interacting with them at the system-level] wasn't a good use of our time; the practices didn't really need that kind of support." In another region, however, RLF indicated that some health systems were reluctant to allow RLF to engage with practice staff, which limited the intensity of coaching RLF were able to provide.

> "It's a different approach in each of the systems, because they're each really running their program a little bit differently. With the [system name] clinics, I'm typically talking with their care managers, going to their care manager meetings. With the [other system name] clinics, they have standing leadership meetings, so I've been attending those, and that usually involves the physician and the care manager and the office manager and then someone from the system leadership as a representative."
>
> *—CPC RLF*

3.4.5. CPC Connect replaced the CPC collaboration site to address usability challenges

The CPC collaboration site, an interactive website run by CMS, was replaced by CPC Connect in September 2015. Like the collaboration site, CPC Connect allows practices to share resources and participate in web-based discussions, as well as to ask questions of CMS, their contractors, and other CPC practices about CPC requirements and Milestones. In addition, CPC Connect hosts a library similar to the CPC collaboration site library, in which CMS and RLF post presentation materials, CPC implementation guides, and other resources.

CPC Connect was launched in response to longstanding concerns from the CPC community about the usability of the CPC collaboration site, including challenges in logging in, navigating the site, and locating posted files. CMS revamped the CPC collaboration site in early 2015 to introduce improvements, including enhanced search capabilities, but challenges remained. Widespread participation of practices on the collaboration site was fairly limited in PY2015, particularly after the first quarter, which perhaps reflects some of the technical glitches that affected the site following its upgrade in early 2015. CPC Connect uses an entirely new electronic platform modeled after social media sites. Each user has a "profile" from which they may share comments or questions with all users or with particular user groups. While interviews with deep-dive practices and most payers took place before the launch of CPC Connect site, a couple of deep-dive practices were already hopeful about the potential improvements.

Action groups, rapid-cycle action groups (which were launched in concurrence with the launch of CPC Connect), and EHR affinity groups encourage practices to use these sites for networking and discussion between sessions. For example, facilitators of the action groups and rapid-cycle action groups often conclude sessions with requests to practices to use these sites to answer follow-up questions or to share information about their Milestone efforts. Since its launch in September 2015, activity on CPC Connect has exceeded activity on the collaboration site in the first two quarters of 2015, and the quality of engagement between practices seems have increased. Much of the activity on the site, however, reflects posts from TMF and RLF rather than posts made directly from practices.

3.4.6. Other payers provided additional learning support to practices

As in the first and second years of CPC, a number of participating payers also provided their own support to practices in CPC's third 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 care management or disease management teams, who provide support to practices or patients as needed. A few payers also offer more extensive practice support, such as (but not limited to) the following:

- Colorado payers, partnering with Rise Health, the selected data aggregation vendor, are visiting practices to provide training on the data aggregation tool.
- One New Jersey payer provides coaches who support practices in practice transformation and quality improvement.
- One Oregon payer provided all-day, in-person trainings on motivational interviewing to practices within its network.

In addition, in Oklahoma, in the first year of CPC, non-CMS payers collaborated with RLF to develop a field service team (see Taylor et al. 2015). Each payer continues to provide a point of contact to the field service team, who, supported by the region's RLF, still provides individualized support to practices.

For information on practices' perspectives on payers' assistance and supports based on survey responses, see Table A.6 in Appendix A.

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 by providing enhanced payment and aligning and coordinating data feedback for participating practices. (As we note in Chapter 3, learning supports are provided to participating practices, but payers' involvement in learning—and their desire for that involvement—vary considerably from region to region.) This work requires a tremendous amount of coordination and collaboration between participating stakeholders. In this chapter, we describe payer and other stakeholder collaboration during the third year of the initiative.

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 or participating in competing initiatives continue to show lower levels of engagement.
- In PY2015, multistakeholder meetings—which involve CPC payers, selected CPC practices, and, in some cases, other stakeholders—became the primary forum for discussing CPC. In all but two regions, these meetings have largely replaced regular meetings of payers only, referred to as multipayer meetings.
- Payers value the opportunity to discuss CPC with practices during multistakeholder meetings. However, in most regions, payers indicated practice engagement in these meetings remains low, and the meetings could be improved by outlining a clearer vision and determining concrete roles for stakeholders.
- 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.
- CMS has improved its relationship with most CPC payers, in part by (1) clearly delineating aspects of the initiative that are flexible and subject to change based on payer input and aspects that must be standardized across all regions and (2) deferring to the other payers on region-specific collaborative discussions (such as selecting a data aggregation vendor).
- CPC brings together a consortium of payers and other stakeholders. As a result of their work together, payers accomplished several collaborative outcomes including aligning quality goals and financial incentives, agreeing on a common set of quality measures, coordinating common approaches to data feedback, and coordinating CPC with other regional efforts.

4.2. CPC collaborative meetings

By PY2015, multistakeholder meetings—involving payers, CPC practices, and, in some regions, other stakeholders—were the most common forum for discussing CPC. In most regions, these meetings replaced regular payer-only meetings, referred to as multipayer meetings (Table 4.1). Payers in Arkansas, New York, and Ohio/Kentucky formed their multistakeholder groups early in the initiative. Payers in other regions were slower to involve these groups but, following encouragement by CMS, all regions formed multistakeholder groups by September 2014. At the end of 2014, CMS, which initially funded multistakeholder faculty to facilitate both meeting types, transitioned to funding only multistakeholder group facilitation.

Table 4.1. Type and frequency of CPC meetings

	Multipayer meetings[a]		Multistakeholder meetings[b]			Work group meetings[c]		
	Frequency		When meetings began	Frequency		Data sharing	Employer	Field service team[d]
	At start of CPC	As of Dec 2015		As of Sep 2014	As of Dec 2015			
AR	Weekly	Monthly	November 2012[e]	Quarterly	Quarterly	X		
CO	Monthly	Monthly	May 2014	Quarterly	Quarterly	X		
NJ	Every two months	None	September 2014[f]	Every other month	Quarterly			
OH/KY	Every two weeks	None	January 2013	Monthly	Quarterly			
OK	Every three weeks	None	October 2012	Monthly	Quarterly	X	X	X
OR	Every two weeks	As needed	February 2014	Quarterly	Every other month	X		

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

[a] Multipayer meetings included only payers participating in CPC.

[b] Multistakeholder meetings included payers participating in CPC and other stakeholders. In September 2014, CMS transitioned from supporting facilitation of multipayer meetings to supporting facilitation for only multistakeholder meetings. CMS commits to regularly attending only multistakeholder meetings.

[c] Work group meeting frequency varied, with groups meeting more frequently during periods of intense activity (for example, when the region was designing reporting templates or reviewing applications for data aggregation vendors).

[d] In Oklahoma, non-CMS payers collaborate with regional learning faculty on a field team to provide additional learning support to CPC.

[e] 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.

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

In all regions, representatives from CPC practices, including clinicians and office managers, participate in multistakeholder meetings. A few regions also include in their discussions consumers, employers, and community groups, such as health foundations and universities (Table 4.2). In PY2015, multistakeholder meetings focused on strategies for coordinating data feedback and for sustaining primary care transformation after CPC ends. As in prior years, payers and other stakeholders also discussed CPC program updates and common barriers to completing Milestones.

Table 4.2. CPC meeting participants, as of December 2015

Region	CPC Payers	CPC practices[a]	Consumers[b]	Employers	Other stakeholders
AR	X	X	X	X	AR Department of Health; health foundations; universities; pharmacists
CO	X	X			State Innovation Model Award leadership
NJ	X	X			NJ Hospital Associations
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] CPC practice representatives included health system executives, clinicians, care coordinators, and office managers.

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

Payers and other stakeholders in most regions supplemented regular multistakeholder meetings with periodic work groups to accelerate progress in one or more of the following priority areas: data sharing, employer engagement, and learning support (Table 4.1). Additionally, payers in four regions continued to hold regular or ad hoc multipayer meetings to discuss CPC issues that interest only payers or that are sensitive or not appropriate for the multistakeholder forum. For example, in Arkansas, after practices indicated that patient-level data would be useful in their transformation efforts during multistakeholder meetings, payers used the payer-only meetings to finalize a plan for providing that information to practices. Due to budget limitations, CMS did not commit to regularly attending work group and multipayer meetings.

4.3. Payer and other stakeholder engagement and meeting dynamics

CPC payers remain committed to supporting advanced primary care through CPC and other initiatives. Capturing the sentiments of several payers, one payer noted, “This is how we do business. Not yesterday, not today—this is how we’re going to do business.… [We’re] in this for the long haul.” Most payers continue to actively participate in CPC meetings and enjoy the opportunity CPC provides to align approaches to value-based purchasing. One payer in Arkansas indicated, “We have built a relationship in our CPC group. We’re kind of like a little family…It helps to make sure we’re all moving down the path together—seeing priorities appropriately.”

In contrast to other regions, Oregon payer engagement in CPC meetings has waned as payers realized CMS's ability to align CPC with other multipayer initiatives in the state was limited. In other regions, as in prior years, smaller payers with fewer lives often participated less actively in meetings. However, this lack of participation was generally not considered problematic, because these payers have few attributed lives in the initiative.

Payers value the opportunity to discuss CPC with practices and other stakeholders, though work remains to actively engage these groups. During the first two years of the initiative, payers in five regions expressed reservations about the value of hosting frequent CPC multistakeholder meetings. However, after forming the groups, most payers indicated that they appreciated the chance to exchange perspectives with practices about their experiences in CPC. In many regions, payer commitment to CPC was reinvigorated after hearing about practices' successes in CPC as well as their challenges to further change. Moreover, payers indicated that practice perspectives were critical to developing coordinated approaches to data feedback.

However, payers indicated engaging stakeholders and maintaining active participation in CPC meetings was challenging. In most regions, nonpayer participants in multistakeholder meetings have changed over time, and current participants frequently miss or do not actively engage in meetings. Payers pointed to several factors resulting in low stakeholder engagement: (1) multistakeholder meetings often occur over the phone instead of in person; (2) participants are also involved in other multistakeholder groups in the state; and (3) the vision for multistakeholder meetings and the roles of stakeholders are not always clear. One multistakeholder faculty described this challenge: "There was not clear guidance or direction or purpose and goals for the multistakeholder meetings. We want stakeholders at the table, but there was not a clear sense of what they were hoping to get with that." In New York and Ohio/Kentucky, the two regions with the highest level of multistakeholder engagement, payers engaged stakeholders early and, by the end of the first program year, had stopped holding multipayer meetings. Payers indicated that their early adoption of multistakeholder meetings helped to break down silos, created a cohesive group, and encouraged active stakeholder participation.

Relations between CMS and other CPC payers continue to improve. During CPC's first two years, CMS found that its ability to collaborate with the other CPC payers on regional objectives—such as data aggregation—was limited by its dual role as initiative convener and participating payer. One payer expressed frustration as follows: "It seemed like CMS wanted to make the decisions and have the rest of us just go along. What they wanted was cooperation; it wasn't collaboration. There's a huge difference between the two." Several strategies improved CMS's collaborative relationships with payers: (1) clearly delineating aspects of the initiative that are flexible and subject to change based on payer input and aspects that must be standardized across all regions and (2) deferring to the other payers on region-specific collaborative discussions (such as selecting a data aggregation vendor). In summer 2015, several payers suggested that CMS could continue to build trust with payers by providing clear plans for sustaining practice support following CPC and increasing opportunities for direct communication between non-Medicare payers and CMS region leads.

4.4. Results of CPC collaboration

In each region, CPC brought together a consortium of payers who agreed to align their goals and financial incentives to drive primary care practice transformation. During CPC meetings, payers accomplished other collaborative outcomes (Table 4.3). In each region, payers agreed on a common set of quality measures; however, as of December 2015, not all payers reported those measures to practices or used them to determine practices' eligibility to participate in shared savings. Additionally, payers in five regions developed a common approach to data feedback (either producing a single report that aggregates data across payers or covering a common set of cost and service utilization measures in individual reports.) In PY2015, payers in these regions released their first aggregated reports or took additional steps to improve existing reports (see Chapter 3.B for more information). Payers in Oklahoma also collaborated with the CMS-funded learning contractor to provide CPC practices with coordinated, individualized technical assistance, although this collaboration was not intended as an outcome from CPC.

Table 4.3. Selected CPC collaborative outcomes, as of May 2016

	Aligned goals and financial incentives[a]	Aligned quality measures[b]	Coordinated approach to data feedback	Coordinated technical assistance[c]	Coordinated plan for sustaining work and aligning it with other initiatives
AR	X	X	X		X
CO	X	X	X		X
NJ	X	X			
NY	X	X			X
OH/KY	X	X	X		X
OK	X	X	X	X	X
OR[d]	X	X	X		
Total number of regions	**7**	**7**	**5**	**1**	**5**

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

[a] CMS and other payer alignment of goals and financial incentives was a direct outcome of payers joining CPC, as opposed to an outcome from ongoing collaborative discussions.

[b] Payers agreed on a common set of quality measures; however, as of May 2016, not all payers reported those measures to practices or used them to determine practices' eligibility to participate in shared savings.

[c] Oklahoma was the only region that collaborated with the CMS-funded learning contractor to provide coordinated, individualized technical assistance to CPC practices. Payers in other regions were involved in CPC learning in less intensive ways, such as participating in learning sessions for practices.

[d] Oregon moved forward with a common approach to data feedback; however, as of December 2015, two of the five payers had stopped participating in the effort.

Moreover, payers in five regions worked together to develop plans to sustain CPC or to coordinate CPC with other regional efforts. Specifically, in response to CMS's proposed rule on the expansion of CPC, payers in several regions submitted a unified response expressing their support for CMS sustaining CPC in some form.[41] Additionally, payers in five regions view their

[41] CMS. "Medicare Program: Revisions to Payment Policies Under the Physician Fee Schedule and Other Revisions to Part B for CY 2016." July 15, 2015. Available at https://www.federalregister.gov/articles/2015/07/15/2015-16875/medicare-program-revisions-to-payment-policies-under-the-physician-fee-schedule-and-other-revisions.

states' State Innovation Model (SIM) Awards, funded by CMS and led by the state's Medicaid program, as a way to expand and sustain practice transformation started under CPC. In these regions, CPC payers and practices are actively engaged in SIM design and implementation decisions and based components of SIMs on CPC. As a result, non-CPC primary care practices 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. As one multistakeholder faculty described, "One of the things that has happened as a result [of CPC] is payers have been able to move from representing their organization to each other, to…representing the collaborative to the community…I think that [move] ultimately impacts the way they have approached their State Innovation Model and their commitment to [it]." Several payers indicated they would shift CPC practices into their SIMs or other practice transformation programs at the end of CPC.

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

5.1. Introduction

CPC requires participating practices to make many complex, interconnected changes in how they deliver care to their patients, through a focus on five key functions: (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. The Centers for Medicare & Medicaid Services (CMS) considers these functions primary drivers in achieving CPC's aims, as specified in the CPC change package.[42] To promote progress toward these five functions, the Center for Medicare & Medicaid Innovation (CMMI) specified a series of Milestones at the start of CPC, and 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. Some Milestones contribute to multiple functions. For example, work on Milestone 9: Health information technology, 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 the way they provide care. CMS assesses whether practices meet Milestone targets, which are considered the minimum requirements to remain in the initiative.

Table 5.1. CPC Milestones for PY2015

1.	**Budget.** Report actual CPC expenditures from PY2014. Complete an annotated annual budget with projected CPC initiative practice revenue flow for PY2015 and actual revenue/expenses from PY2014.
2.	**Care management for high-risk patients.** Continue to risk-stratify patients and expand care management activities for highest risk patients and to 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 hours a day, 7 days a week with a care team that has real-time access to their electronic medical records. Continue to implement asynchronous forms of communication (for example, patient portal and email) and ensure timely responses. Measure visit continuity by empaneled patients to providers in the practice.
4.	**Patient experience.** Assess patient experience through patient surveys or patient and family advisory council meetings and communicate to patients (using electronic, poster, pamphlet, or similar communication methods) about resulting changes the practice is making.
5.	**Quality improvement.** Continue to perform continuous quality improvement using electronic health record (EHR)-based clinical quality measures (eCQMs) on at least three of the nine measures that practices report annually. Review at least one payer data feedback report (CMS Practice Feedback Report or other payers' reports) to identify a high-cost area and a practice strategy to reduce this cost while maintaining or improving quality.
6.	**Care coordination across the medical neighborhood.** Track patients by implementing two of three options: follow up via telephone with patients within one week of emergency department (ED) visits; 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.

[42] The CPC change package (https://innovation.cms.gov/Files/x/cpcidiagram.pdf) 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.

Table 5.1. *(continued)*

7.	**Shared decision making.** Use at least three decision aids to support shared decision making (SDM) for three preference-sensitive conditions and track patient eligibility for and use of the aids.
8.	**Participating in learning collaborative.** Participate in regional and national learning offerings, participate in at least one of the advance primary care action groups,[a] and communicate with regional learning faculty.
9.	**Health information technology (IT).** Attest that each eligible professional in the practice is engaged with and working toward attestation for Stage II Meaningful Use in the timelines set by the Meaningful Use program.

[a] The advanced action groups covered behavioral health integration, self-management support, and medication management.

In this chapter, we detail practices' work implementing CPC overall and each Milestone, using a range of data sources. We focus on findings that are relatively substantial 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 2014 and 2015 for CPC as a whole, by region and by selected practice characteristics.

In Section 5.4, we focus on Milestones 2 through 9.[43] For each Milestone, we begin with an overview of its implementation in PY2015, followed by detailed findings from a variety of data sources. These sources include the following data collected in PY2015:

- CPC practices' self-reported 2015 data submitted to CMS to document their Milestone work.
- A practice survey fielded in 2015 (as well as earlier data collected in 2012 and 2014).[44] This survey includes a modified form of the Patient-Centered Medical Home Assessment (M-PCMH-A) tool that we adapted for the CPC evaluation to capture approaches to care delivery in seven areas that relate closely to CPC Milestones.

[43] This chapter does not include Milestone 1: Budget, because it does not reflect transformation; see Chapter 3 for this information.

[44] We have conducted three rounds of the CPC practice survey: at the start of the initiative, October through December 2012; 18 to 21 months after CPC began, in April through July 2014; and again 30 to 33 months after CPC began, from April through August 2015. (The first round of the practice survey included only CPC practices, because the comparison practices had not yet been selected. The second and third rounds included both CPC and comparison practices.)

- Qualitative data collected in 2015 from site visits to 21 deep-dive practices (3 practices per region) selected for intensive study,[45] which provide concrete examples of the quantitative findings, including information on how practices are implementing each Milestone and associated barriers and facilitators.

The first two annual reports describe in more depth practices' implementation of CPC in the first two years (Taylor et al. 2015; Peikes et al. 2016).

In Section 5.5, we describe the assessment by CMS and 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 deep-dive data on cross-cutting barriers and facilitators to implementation progress, each of which spans several Milestones. Finally, in Section 5.7, we outline implications of these findings for CPC's implementation during the remainder of the initiative.

5.2. Key takeaways on practice changes in care delivery

Practices continue to work to transform care delivery. Across the CPC 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, initial care processes, and workflows. In PY2014, they made meaningful progress in each of the CPC Milestones, demonstrating that CPC practices were indeed changing care delivery. In PY2015, practices continued to refine their care processes and workflows. However, each Milestone offers room for improvement in the final year of CPC.

- CPC practices in each region self-reported improvement on their approaches to delivering primary care during the first three years of CPC. However, the rate of improvement between 2014 and 2015 was slower than improvement between 2012 and 2014.[46]

- By 2015, practices' self-reports on the seven domains in the practice survey's M-PCMH-A indicated relatively high scores for risk-stratified care management, access to care, and continuity of care, suggesting that practices were using fairly advanced approaches in these domains. Scores for planned care for chronic conditions and preventive care, patient and caregiver engagement, coordination of care across the medical neighborhood, and continuous improvement driven by data were lower, and all seven domains offer room for growth. (Although the seven domains measured in the practice survey do not align one-to-one with the CPC Milestones or functions, they are fairly consistent with CPC Milestones and functions, cover care processes and supports that prior studies suggest are important to primary care redesign, and are useful for tracking progress in transforming care.)

[45] 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.

[46] 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. CPC may also raise the standards of some practices, leading to lower ratings of the same approaches over time.

- Improvements in care delivery reported on the practice survey generally did not correlate with practice characteristics (practice size, practice ownership, or how clinicians were compensated) or with CPC funding per clinician.

- CPC appears to have helped some practices improve their approaches to care delivery more than others between 2012 and 2015. Specifically, four types of practices showed the most improvement: (1) practices with lower scores on the M-PCMH-A at baseline, (2) practices that were not a recognized PCMH before CPC, and (3) practices that were rated in the bottom two-thirds of CMS scores for their application to participate in CPC, and (4) practices that reported using data reports from their EHR to guide quality improvement. All four groups had lower average scores in 2012 than CPC practices overall; therefore, the larger increases over time may reflect these practices having more room for improvement.

- All data sources indicated that the area of greatest transformation for CPC practices is risk-stratified care management (Milestone 2). The Milestone and the deep-dive data indicate that CPC practices used multiple sources of information and iterative processes to risk-stratify patients. During PY2015, some practices refined their approaches to risk stratification, for example, by including or expanding consideration of patients' family support and social needs when determining a patient's risk score. Care managers, who are predominantly nurses, tended to focus on patient education, coaching, and monitoring for chronic conditions; management of care transitions; post-discharge contact; and care-plan development.

- There is still room for improvement in the delivery of risk-stratified care management in CPC practices. For example, while care managers are increasingly becoming part of CPC practices' interprofessional teams, members from several practices continued to describe confusion among clinicians, staff, and in some cases the care manager, over the responsibilities of this role. Care managers in several practices also noted the challenge of establishing relationships with patients and engaging them in behavior modification. Finally, several practices described challenges with documenting care management encounters and care plans in the EHR given current EHR capabilities.

- To improve access and continuity (Milestone 3) practices continued to register patients on their portals, in part because Stage 2 Meaningful Use incentives also emphasized patient portals. A patient portal is a secure website that allows patients 24-hour access to personal health information from anywhere with an Internet connection. Using a secure username and password, patients can view health information such as recent doctor visits, discharge summaries, and medications. Most practices offered patient portals for messaging and other activities, but practice staff continued to report that older patients' lack of comfort with technology, technical glitches, and a lack of practice resources posed challenges to enrolling patients and getting them to use the portals. Because Meaningful Use emphasizes portals, other options for enhanced access (as measured by the Milestone data) may have received less attention from practices. Deep-dive and survey data, however, indicate that practices continued to improve wait times for patient appointments; telephone access for patients; and after-hours access to clinicians via email or telephone, or in person.

- In PY2015, to improve patient experience (Milestone 4), practices continued to conduct patient surveys, convene PFACs, or pursue a combination of strategies to gather feedback and make changes in response to that feedback. An increasing percentage of practices feel that patient feedback from surveys and/or PFACs is "very important" to improving the care they provide to patients. Milestone data indicate that surveys continued to be the most common method used for eliciting patient feedback; however, use of PFACs rose from 20 percent in 2013 to 42 percent in 2014 to 47 percent in 2015. In 2015, more deep-dive practices started PFACs, and those using PFACs noted that feedback from these councils was more useful for guiding changes than data from patient surveys, because they permitted more nuanced discussion of patients' concerns and experiences. As a result of this Milestone work, practices made improvements to scheduling, office hours, appointment types, the number of front-office staff, waiting areas, and continuity of care between patients and clinicians. Nonetheless, challenges remain in gathering patient feedback—including perceived survey fatigue among patients, recruiting a diverse group of patients for PFACs, and scheduling PFAC meetings during times convenient for both practice members and patients. Interviews with deep-dive practices suggest that there is also more room for practices to share with their patients the findings and improvements they are making based on feedback from patient surveys and PFACs.

- Findings from the practice survey suggest that CPC practices have increased their focus on quality improvement (Milestone 5). Several deep-dive practices noted that tracking eCQMs helped them organize and maintain a focus on quality improvement, including tracking and following up on preventive services. It also helped practices more efficiently organize care around condition-specific needs, particularly for high-risk patients. Deep-dive respondents often noted that the reporting requirements for this Milestone, specifically regarding development of consistent data documentation in the EHR and processes for reporting, were time-consuming and resource-intensive. Some practices face challenges making data-driven improvement a part of their cultures.

- Based on data from the practice survey, practices that reported using data reports from their EHR to guide quality improvement increased their primary care functioning (scores on the practice survey's M-PCMH-A) from baseline to 2014 and 2015 more than practices that did not report using data reports from their EHR. This finding may indicate the importance of this work or that high-functioning practices have more capacity to focus on QI and EHR data.

- Deep-dive practices identified several challenges in using payers' feedback reports to guide quality improvement, including inconsistent access to patient-level data, receiving reports that represented small numbers of patients, and reports that were not aligned across payers in measurement methodologies and reported outcomes. Deep-dive practices that were part of large systems often received PDF files created by their system that contained a tailored summary of their practices' data from the Medicare quarterly feedback reports. Respondents from some of these practices indicated that they did not receive patient-level data (even though Medicare and some other payers send it to practices or otherwise provide access to it). Some smaller, independent practices lacked the time and resources to access and analyze the feedback data.

- CPC practices made progress from 2012 to 2015 on the care-coordination tasks of follow-up after ED visits and hospital discharges (Milestone 6) as measured by the Milestone data and the practice survey. Findings from the deep-dive interviews also indicated that many practices refined workflows (to "pull" data from hospitals), and some entered into agreements with the hospitals to which they most frequently admitted patients to obtain prompt discharge data. However, there is still room for improvement, particularly in getting hospitals to "push" patient discharge data to practices.

- Rates of use of care compacts (care-coordination agreements) with specialists continue to be low in 2015. Like practices nationwide, CPC practices have substantial opportunities to improve how they coordinate and exchange information with specialists.

- CPC practices are making slow progress in implementing shared decision making (Milestone 7). There continues to be room for improvement in this area in (1) providers and staff understanding what a preference-sensitive condition is, (2) development of care processes to provide shared decision making without overwhelming clinicians, and (3) refining the ability to track shared decision making in EHRs. Deep-dive practices that used teamwork to engage patients in shared decision making found Milestone 7 more manageable, but this approach also posed risks of potentially inappropriate distribution of decision aids if the workflows were not carefully thought out.

- To fulfill the participation requirements for CPC learning activities (Milestone 8), practices participated in full-day in-person regional learning sessions, attended webinars, and participated in at least one action group or affinity group (a smaller group designed to foster increased peer-to-peer sharing and rapid testing of small changes to practice care delivery). They also contributed to the CPC collaboration website (prior to mid-2015) and to the CPC Connect website (after August 2015, when CPC Connect replaced the collaboration site), and engaged with the regional learning faculty (RLF) to support the practices' transformation efforts. In assessments by RLF, most practices met Milestone 8 requirements for participating in CPC learning activities. (In Chapter 3, we describe the regional and national learning activities offered in PY2015 and CPC practice perspectives on the learning supports.)

- As required by CPC, practices are using EHRs certified by the Office of the National Coordinator for Health Information Technology, and 99 percent of CPC practices attested that their eligible providers are currently working toward meeting the Stage 2 requirements for Meaningful Use (Milestone 9: Health information technology). However, triangulation of data from Milestone reporting, practice survey, and the deep-dive practices indicates that practices face challenges obtaining and exchanging timely data from providers outside their practice or system. These challenges pose barriers to improving follow-up care after ED visits and hospitalizations and to coordinating care for patients after visits to their specialists.

- As in PY2014, the deep-dive practices that found CPC Milestone implementation more manageable in PY2015 were practices that used team-based approaches to workflows. Clear role delegation and open communication helped support teamwork, particularly for Milestones 2, 5, 6, and 7. Spreading the work across a variety of staff in the practice

decreased the burden on any one staff member and made staff feel they were working together toward improvement goals. It continues to be challenging to motivate clinicians and staff in a CPC practice to support the workflow and EHR documentation changes needed to implement the Milestones, although deep-dive data suggest that this situation improved somewhat in 2015 as practices spent more time reinforcing the importance of this work with their clinicians. Larger practices in which only a lead clinician or a few clinicians and staff members were implementing CPC reported more difficulty implementing the Milestones.

Practices continued to face implementation challenges in 2015 across several Milestones. Continued challenges in the third year are not surprising, because the initiative requires extensive care delivery changes on many fronts. Practices' experiences with these challenges can inform both support for work in the final year of CPC and future primary care initiatives:

- In 2015, most deep-dive practices continued to report that meeting the requirements of all nine Milestones plus the reporting requirements was overwhelming, and they would have preferred to focus on fewer Milestones. Practices continued to report in 2015 that risk-stratified care management (Milestone 2) and timely follow-up after hospital discharge and ED visits (Milestone 6) are the most clinically relevant to improving patient care.

- Although CPC funding is substantial, particularly for large practices and systems with multiple practices in CPC (which may benefit from economies of scale), it continued to be challenging in 2015 for some small practices to support full-time care managers with CPC funds alone. Several deep-dive practices also continued to cite additional funding needs, beyond CPC resources, which would allow them to hire or consult with health IT experts to support CPC documentation processes and reporting.

- As in prior years, system-affiliated deep-dive practices tended to have more resources for enhanced care delivery than small independent practices (including, in some cases, access to behavioral health providers, pharmacists, and health IT support), but system-owned practices tended to face more administrative hurdles because systems often want to roll out processes similarly across all their CPC practices. This factor made it harder for system-owned CPC practices to be nimble in adapting their local workflows for some aspects of CPC implementation.

- In general, current limitations in EHR functions made it difficult for deep-dive practices to create and modify dynamic care plans that can be adapted as patient needs change (Milestone 2). These limitations posed challenges for care managers, clinicians, and other staff who need to enter, track, and retrieve data for these Milestones.

- Some practices lack the knowledge or adequate EHR vendor or internal IT support to modify their EHRs to efficiently collect and extract eCQM data and to create care plans.

- In general, after three years in the initiative, CPC practices have improved their approaches to care delivery. CPC practices, however, are performing at only slightly more advanced levels than comparison practices (based on data from the practice survey in 2015) in most areas. The area with the biggest difference between CPC and comparison practices was risk-stratified care management, a key focus of CPC. The improvements in primary care

functioning in comparison practices over time may reflect these practices face some of the same pressures and incentives to improve care delivery as CPC practices. [47]

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

Mathematica has fielded three rounds of the practice survey (2012, 2014, and 2015) to gather practices' self-reported approaches to various aspects of primary care delivery. We highlight below selected findings for the 484 CPC practices that responded to all three survey rounds.[48] All three rounds of the survey used a modified form of the PCMH-A tool, which we adapted for the CPC evaluation to capture approaches to care delivery in seven areas (Table 5.2). Although the seven areas do not align one-to-one with the CPC Milestones or functions, they are fairly consistent with them, cover care processes and supports that prior studies suggest are important to primary care redesign, and can be used to track progress.[49] The survey module contains six domains; based on a factor analysis, we broke one of these domains into two domains, for a total of seven domains.

For each question, practices rated their own performance on a scale of 1 to 12, divided into four levels (1–3, 4–6, 7–9, 10–12), where 1 signifies least advanced approaches to delivering care and 12 signifies the best approaches to delivering care.

[47] We explored whether the reason that comparison practices are making sizeable improvements in improving care delivery approaches is due to 20 percent of comparison practices being in the same systems as CPC practices. Specifically, the systems might be filling out the surveys uniformly for their CPC and comparison practices, or might be spreading the CPC activities to their practices that are in the comparison group.

The evidence does not support the first possibility. Only two percent of the comparison practices that were in the same system as a CPC practice had exactly the same survey responses as the CPC practices in their system. And, overall, the group of comparison practices in the same systems as CPC practices did not have the same average scores as the group of CPC practices from those same systems (8.0 versus 8.7 out of 12 in 2014, and 8.7 versus 9.2 in 2015, respectively).

There is some evidence that some systems may have spread some of the CPC activities to their practices in the comparison group. Comparing average overall M-PCMH-A scores of comparison practices that were in systems with CPC practices to those that were not, comparison practices in systems with CPC practices improved slightly more (from 8.0 to 8.7) than those not in systems with CPC practices (from 8.0 to 8.3) from 2014 to 2015. Qualitative data collected from systems with CPC practices also indicate that some systems spread some components of CPC to non-participating practices.

[48] The 484 CPC practices include 14 practices that withdrew or were terminated from CPC before April 2015.

[49] The first survey round contained 41 questions that we developed using the scale approach. We took 26 of these questions (some with slight refinements) from 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). To more closely measure the areas of CPC focus, we changed the order and domain assignment for some of the PCMH-A questions. Because the PCMH-A did not cover all the aspects of primary care delivery relevant to the CPC evaluation, we added 15 questions that we either developed ourselves or adapted from PCMH-A questions. We dropped three of these questions from the second survey round, and dropped one question from the scores, because it was not correlated with any other questions, leaving 37 questions that we tracked over time.

We created summary composite measures for the seven M-PCMH-A domains, and of the overall score, as weighted averages of each practice's response to all questions in a given domain. We derived the weights, or factor loadings, from a factor analysis that we conducted on the responses of CPC practices to the 2012 practice survey. Factor analysis uses the correlation between the individual question and the domain it measures to reflect the reliability of each question in measuring the domain. These weights are also referred to as reliability weights (Poznyak et al. 2016).

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

Domain	Number of questions	Topics
Continuity of care	2	1. Patient assignment to specific provider, and use of that assignment to schedule and monitor supply and demand
		2. The extent to which patients are encouraged to, and usually see their own provider and practice team
Access to care	3	3. Flexibility of appointment systems for different-length and same-day visits
		4. Asynchronous communication with practice team including patients' preferred mode
		5. Patient after-hours access to a coverage team or the practice, and availability of patient EHR
Planned care for chronic conditions and preventive care	6	6. Availability and proactive use of patient registries by practice teams
		7. Availability and use of evidence-based guidelines in care
		8. Focus of patient visits on acute and planned care needs
		9. The extent to which evidence-based reminders to providers are specific to the individual patient encounter
		10. Extent of role of nonphysician practice team members in providing clinical care
		11. Extent to which medication reconciliation occurs regularly and is documented in the patient's medical record
Risk-stratified care management	3	12. Degree to which a standard method or tool to stratify patients by risk level is used and guides care delivery
		13. The provision of clinical care management services for high-risk patients by care managers integrated into the practice team
		14. The availability of registry or panel-level data to assess and manage care for practice populations
Patient and caregiver engagement	6	15. Assessment and incorporation of patient and family preferences in planning and organizing care
		16. How systematically practice teams involve patients in decision making
		17. Extent to which patient comprehension of written and verbal communication is assessed and accomplished
		18. The type of self-management support provided by members of the practice team
		19. How test results and care plans are communicated to patients
		20. The use of feedback from a patient and family caregiver council to guide practice improvements

Table 5.2. *(continued)*

Domain	Number of questions	Topics
Coordination of care across the medical neighborhood	10	21. The extent of tracking of patient referrals to specialists 22. The collaborative development of care plans with patients and families that include self-management and clinical management goals, and are used to guide care 23. The extent to which referral relationships with a range of specialists are formalized 24. Availability of behavioral health services for patients 25. The ease of obtaining referrals for specialty care, hospital care, or supportive community-based resources and exchange of relevant information with other providers before and after the patient visit 26. Practice staff follow-up with patients following ED/hospital visits 27. How practices link patients to supportive community-based resources 28. Transmission of patient information when this practice refers patients to hospitals, EDs, and specialists 29. The timeliness of information received from hospitals and EDs following a patient's visit 30. The proportion of patients for whom the practice knows the total cost to payers for medical care
Continuous improvement driven by data	7	31. Practice's use of quality improvement (QI) activities that are continuous and based on proven improvement strategies 32. Extent to which QI activities are conducted by practice teams supported by a QI infrastructure with meaningful involvement of patients and their families 33. The availability of comprehensive performance measures to practice site and individual providers 34. Availability of feedback reports on patient care experiences, and care processes or outcomes to practice site, individual providers, practice teams, patients, other teams, and external agencies 35. The availability of staff, resources, and time for QI activities 36. The extent to which hiring and training processes focus on improving care and creating patient-centered care 37. The extent to which responsibility for conducting QI activities is shared by staff and is made explicit through protected time to meet and specific resources to engage in QI

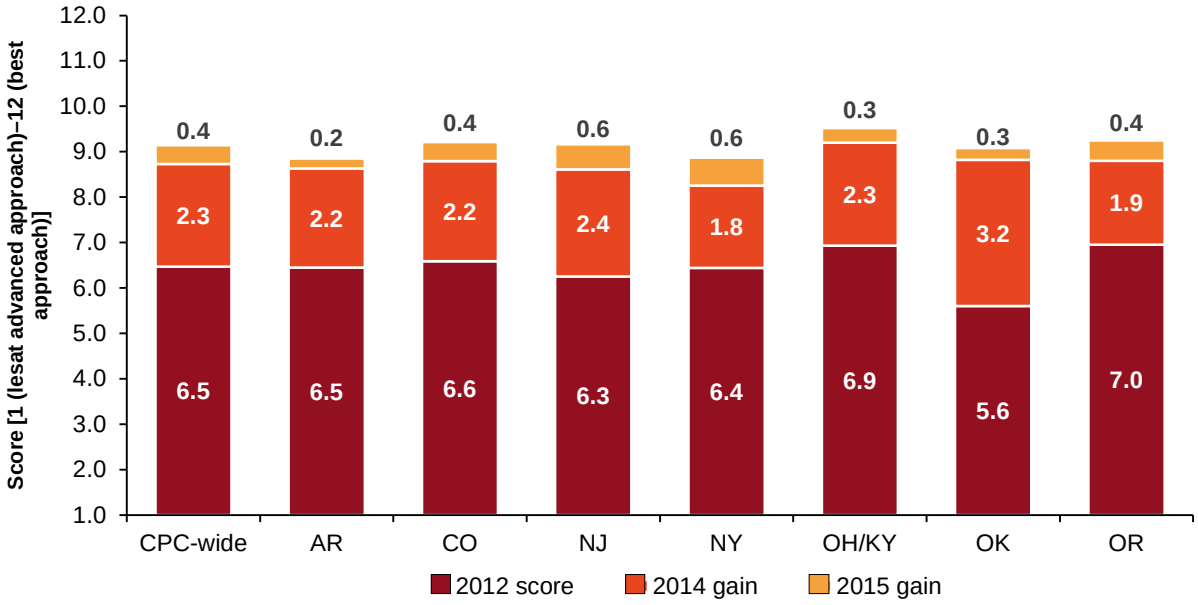
See Appendix A, Table A.1, for a complete list of the survey questions.

Overall, CPC practices have made notable changes to the way they deliver care since 2012. Between 2012 and 2015, the average CPC practice's overall M-PCMH-A score, representing self-reported approaches to primary care delivery across the seven domains, improved 2.7 points (from 6.5 out of 12 in 2012, to 8.5 in 2014, and to 9.1 in 2015). CPC practices' self-reported functioning suggests that, although practices continued to improve their functioning across the seven domains, improvements from 2014 to 2015 were much smaller than those from 2012 to 2014 (Figure 5.1).

Between 2012 and 2015, each region's CPC practices demonstrated modest improvements in the average overall M-PCMH-A scores. For the most part, average changes were improvements between 2.3 and 2.9 points. However, CPC practices in Oklahoma experienced a

larger improvement of 3.5 points, from 5.6 in 2012 to 9.1 in 2015, due in part to their relatively low score in 2012 (see Appendix A, Tables A.2a to A.2b).

Figure 5.1. CPC practices' mean 2012 overall modified PCMH-A score, with 2014 and 2015 gains, CPC-wide and by region

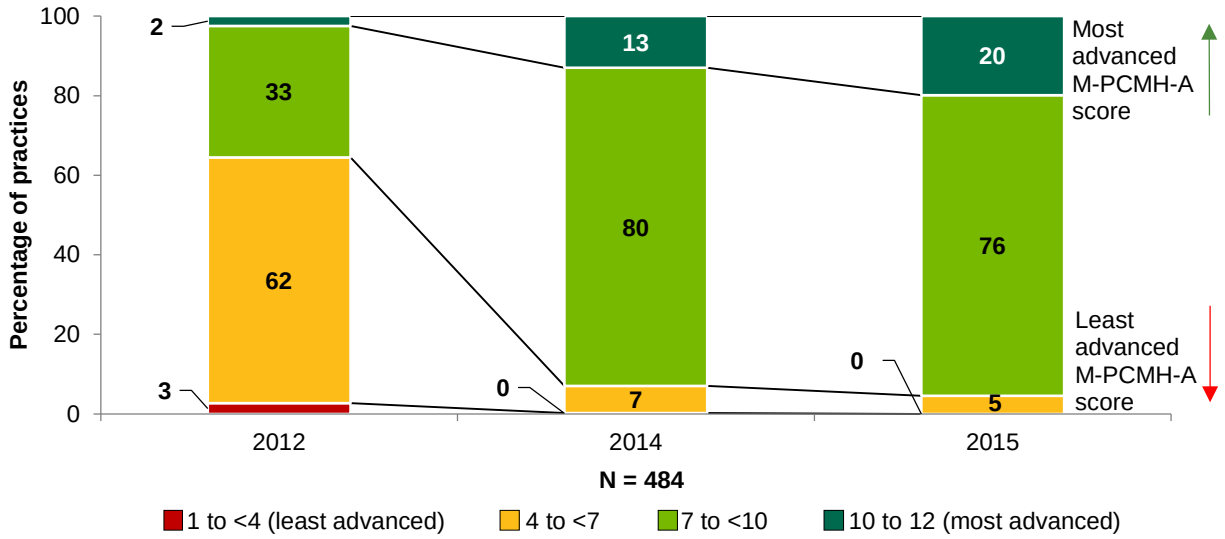


Source: Mathematica analysis of the 2012, 2014, and 2015 CPC practice surveys administered from October through December 2012, April through July 2014, and April through August 2015, respectively.

Notes: The summary score uses a scale of 1 (least advanced approach) to 12 (most advanced approach).

Between 2012 and 2015, 95 percent of CPC practices improved their overall modified PCMH-A score. The proportion of CPC practices with scores indicating the highest performance category (between 10 and 12), grew from 2 percent in 2012 to 13 percent in 2014 and to 20 percent in 2015 (Figure 5.2). CPC practices in the second highest performance category (between 7 and 10) increased dramatically between 2012 and 2014, from 33 to 80 percent, and fell slightly in 2015 to 76 percent as more practices moved into the highest performance category in 2015. By 2015, no CPC practices were in the least advanced category (1 to 4), and about 5 percent reported responses indicating that they were slightly more advanced (4 to 7).

Figure 5.2. Distribution of modified PCMH-A score for CPC practices, 2012 to 2015



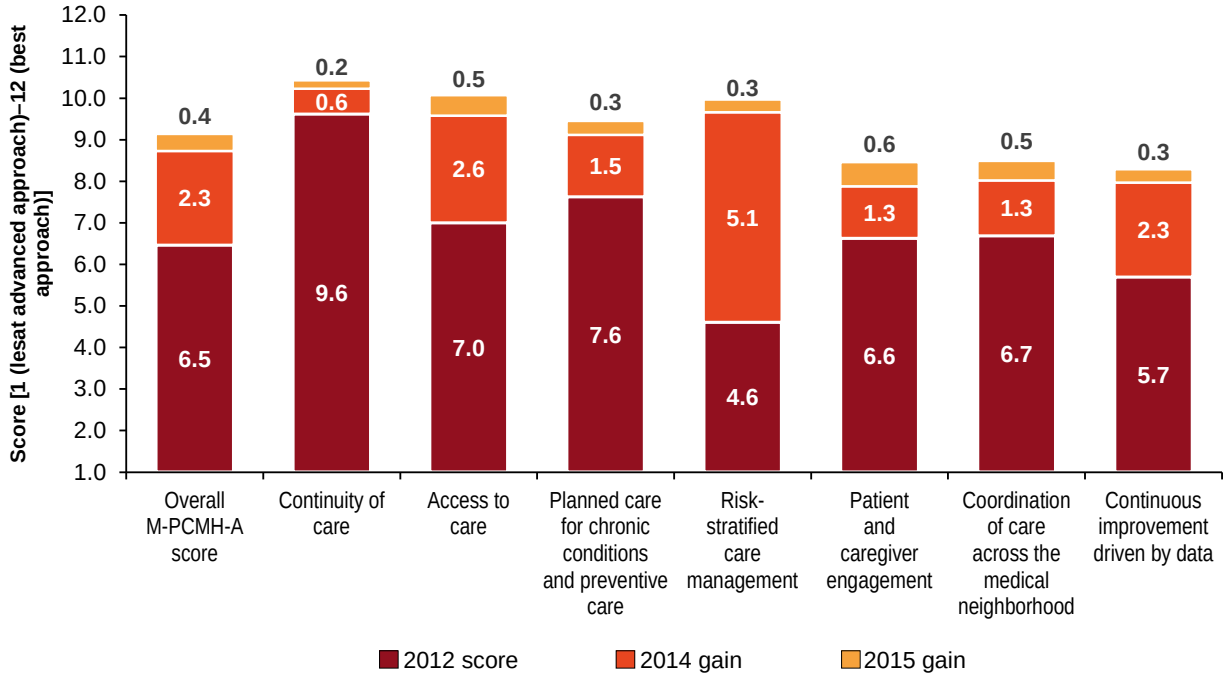
Sources: Mathematica analysis of the 2012, 2014, and 2015 CPC practice surveys administered October through December 2012, April through July 2014, and April through August 2015, respectively.

Notes: The overall score is based on the practice's self-reported approaches to care delivery using 37 questions contained in the modified Patient-Centered Medical Home Assessment (M-PCMH-A). Each question and the summary score uses a scale of 1 (least advanced approach) to 12 (most advanced approach).

Some domains of primary care delivery improved more than others (Figure 5.3 and Table 5.3). Looking separately at each of the seven primary care domains, CPC practices improved between 2012 and 2015 in all areas, but improvements from 2014 to 2015 were much smaller than from 2012 to 2014. Between 2012 and 2014, practices reported making the biggest improvements in risk-stratified care management (5.1 points, from 4.6 to 9.7) and access to care (2.6 points, from 7.0 to 9.6), with improvements in the other five domains ranging between 0.6 and 2.3 points. Between 2014 and 2015, CPC practices continued to improve, but changes were small, with improvements in each of the seven domains between 0.2 and 0.6 points out of 12.

By 2015, scores in three of the seven domains—continuity of care, access to care, and risk-stratified care management—averaged 10.0 or higher, suggesting that practices were using fairly advanced approaches to care for these domains. But, after three years, there is more room for growth in the remaining four domains: planned care for chronic conditions and preventive care, patient and caregiver engagement, coordination of care across the medical neighborhood, and continuous improvement driven by data, where average scores were between 8.3 and 9.5 in 2015.

Figure 5.3. CPC practices' mean 2012 modified PCMH-A scores, with 2014 and 2015 gains, for the seven domains and overall



Sources: Mathematica analysis of the 2012, 2014, and 2015 CPC practice surveys administered from October through December 2012, April through July 2014, and April through August 2015, respectively.

Notes: Each domain uses a scale of 1 (least advanced approach) to 12 (most advanced approach).

Composite scores for the seven M-PCMH-A domains are first calculated at the practice level. Practice-level composite scores are weighted averages of each practices' response to all questions in a given domain. The weights are derived from a factor analysis we conducted on the responses of CPC practices to the 2012 practice survey that reflects the reliability of each question in measuring the domain. If a practice skipped a question, we rescaled the weights of the nonmissing questions in the domain so that the sum of the weights equals one, regardless of whether one or more responses were missing. After we created composite scores for each domain, we calculated a reliability-weighted summary measure, the "overall M-PCMH-A score," composed of a weighted average of the composite scores for each of the seven domains. We then averaged composite scores across all practices to calculate the sample-wide composite scores. We assigned practice-level weights to comparison practices that were equal to the product of a matching weight and nonresponse weight.

Table 5.3. Mean CPC practice response to modified PCMH-A questions in 2012, 2014, and 2015

	CPC-wide		
Domain	**2012**	**2014**	**2015**
M-PCMH-A scales **Scale: 1 (least advanced approach) to 12 (most advanced approach)**			
Continuity of care	9.6	10.2	10.4
Access to care	7.0	9.6	10.1
Planned care for chronic conditions and preventive care	7.6	9.1	9.5
Risk-stratified care management	4.6	9.7	10.0
Patient and caregiver engagement	6.6	7.9	8.5
Coordination of care across the medical neighborhood	6.7	8.0	8.5
Continuous improvement driven by data	5.7	8.0	8.3
Overall M-PCMH-A score	6.5	8.7	9.1
Sample size	484	484	484

Source: Mathematica analysis of the CPC practice survey results, fielded by Mathematica 2012, 2014, and 2015.

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 rescaled 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 we created composite scores for each domain, we calculated a reliability-weighted summary measure, the overall modified PCMH-A score.

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

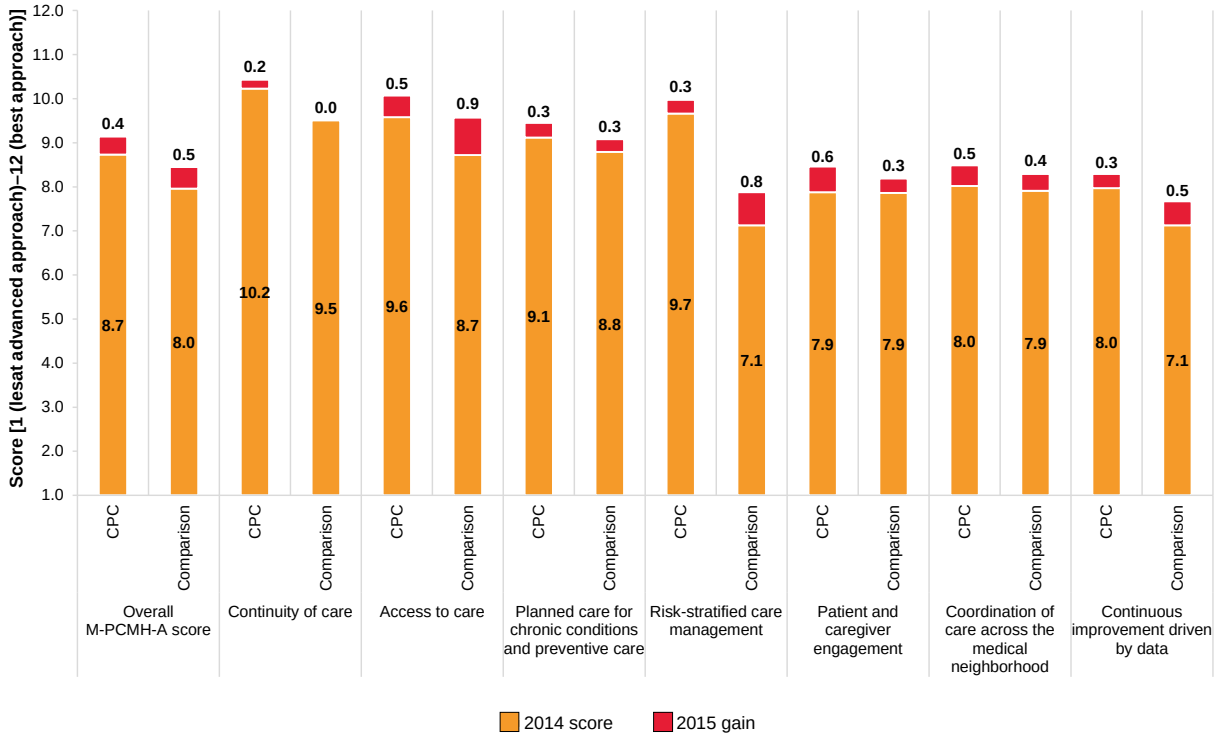
Improvements in care delivery were generally not correlated with practice characteristics or CPC funding per clinician. We also examined whether certain types of CPC practices experienced bigger changes in the overall M-PCMH-A scores. The magnitude of changes in the overall M-PCMH-A scores from 2012 to 2015 was not consistently associated with practice size, practice ownership, rural/urban status, how clinicians were compensated by the practice, or CPC funding per clinician (see Appendix A, Table A.3).

CPC practices that started with the most room for improvement improved their care delivery the most. These practices include those with lower average scores on the M-PCMH-A at the start of CPC in 2012, practices that were *not* a recognized PCMH before CPC, practices that were rated in the bottom two-thirds of CMS scores for their application to participate in CPC, and practices that reported using data reports from their EHR to guide quality improvement. There was significant overlap in practices that shared these characteristics (54 percent had at least three of these four characteristics). Each of these subgroups may have had more room for improvement, because they had lower scores on the M-PCMH-A at baseline (see Appendix A, Table A.3).

In general, after three years of the initiative, CPC practices improved their approaches to care delivery but are performing at only slightly more advanced levels than comparison practices. We do not have data on comparison practices in 2012. Between 2014 and 2015,

comparison practices' average overall M-PCMH-A score improved from 8.0 to 8.5, compared with an increase from 8.7 to 9.1 for CPC practices (see Appendix A, Table A.2a). As was the case with the CPC practices, comparison practices reported small improvements from 2014 to 2015 in each of the seven domains of between less than 0.1 and 0.9 points (see Figure 5.4), *although their self-reported functioning was lower than that of CPC practices in both 2014 and 2015.* Comparison practices may be facing similar pressures and incentives to improve care delivery, indicated by year-to-year improvements in M-PCMH-A scores for comparison practices.

Figure 5.4. CPC and comparison practices' mean 2014 modified PCMH-A scores and the 2015 gains for the seven domains and overall



Source: Mathematica analysis of the 2014 and 2015 CPC and comparison practice surveys administered April through July 2014, and April through August 2015, respectively.

Notes: Each domain uses a scale of 1 (least advanced approach) to 12 (most advanced approach).

We weighted comparison practice responses to ensure that CPC and comparison samples were similar and to adjust for nonresponse.

5.4. Progress on individual Milestones

Having described practices' self-reported changes in 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.) We draw these findings primarily from the Milestone data that practices

submitted to CMS;[50] results from the practice surveys; and qualitative data collected during site visits to deep-dive practices. When relevant, we draw on other data sources including feedback from CMS, stakeholders, and regional learning faculty, and qualitative interviews of patients receiving care management in deep-dive practices. We first describe each Milestone, then provide an overview of findings. We next report findings about Milestone implementation based on all practices from the Milestone data and practice survey data. Finally, we discuss insights on the Milestone from site visits to the 21 deep-dive practices selected for intensive study. We focus on findings from PY2015; additional details on Milestone implementation from PY2013 and PY2014 appear in the earlier annual reports (Taylor et al. 2015; Peikes et al. 2016). CMS revises Milestones and Milestone reporting slightly each year of the CPC initiative. A summary of changes in Milestone requirements by year is available at https://innovation.cms.gov/Files/x/CPCI-Milestones.pdf.

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 PY2015, Milestone 2 required each practice to continue to risk-stratify its patients, expand care management activities to include patients with rising risk[51] as well as the highest risk patients, and continue to implement one of three advanced primary care strategies.

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

1. Empanel each active patient (link each patient directly to a provider or care team that has responsibility for that patient)
2. Risk-stratify each empaneled patient to help define his or her level of risk
3. Provide care management to high-risk patients and patients with a rapidly rising risk in a manner consistent with each patient's needs

In addition to continuing the risk-stratified care management work on this Milestone, CPC asked practices to continue to 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 and the deep-dive data indicate that CPC practices used multiple sources of information and iterative processes to risk-stratify patients. During the third program year (PY2015), some practices refined their approaches to risk stratification, for example, by including or expanding consideration of patients' family support

[50] The number of practices that report Milestone data falls over time as practices withdraw or are terminated from CPC. For example, 478 practices reported data in quarter 1, 476 in quarter 2, 471 in quarter 3 and 466 in quarter 4 of 2015. Practices are required to report on different Milestones in each quarter, with most reporting in quarters 1 and 4.

[51] The CPC 2015 Milestone and Reporting Guide refers to *rising* risk patients as those with "a combination of chronic disease, challenging social situations, and inconsistent attention to health care and prevention."

and social needs when determining a patient's risk score. In most deep-dive practices, clinicians either assign patients' risk scores or they approve risk scores assigned by care managers or nurses. Care managers, who are predominantly nurses, tended to focus on patient education, coaching and monitoring for chronic conditions, care-plan development, management of care transitions, and post-discharge contact.

CPC practices' responses to questions about their approach to delivering risk-stratified care management suggest a large improvement from 2012 to 2014 and smaller, but continued improvement in 2015. For risk-stratified care management as measured by the M-PCMH-A, CPC practices had a mean score of 10 out of 12, 2.1 points higher than that of comparison practices. Still, there is room for improvement in the delivery of risk-stratified care management in CPC practices. For example, while care managers are increasingly becoming part of CPC practices' interprofessional teams, members from several practices continued to describe confusion among clinicians, staff, and in some cases the care manager, over the responsibilities of this role. Care managers in several practices also noted the challenge of establishing relationships with patients and engaging them in behavior modification. Several practices described challenges with documenting care management encounters and care plans in the EHR given current EHR capabilities. Some small, independent practices continued to find it challenging to afford a nurse care manager. CPC practices in regions or systems with access to mental-health workers and pharmacists were in a better position to pursue advanced primary care strategies in behavioral health integration and medication management than were small, independent practices or practices in regions with a low supply of such specialists.

b. Detailed findings

b.1. Empanelment

To perform risk-stratified care management, practices are required to first empanel each active patient to a provider or care team; this continues to go well. Milestone data submissions indicate that, by the end of 2015, 99 percent of CPC practices' active patients were "empaneled or identified in the EHR as being associated with a primary care practitioner"[52] (Table 5.4). This finding indicates a moderate increase from 91 percent at the end of 2013 and a small increase from 98 percent in 2014.[53] In addition, in the 2015 practice survey, 71 percent of CPC practices versus 55 percent of comparison practices reported the best approaches to whether they empaneled patients and encouraged them to see their specified provider and practice team (see Appendix A, Table A.4a).

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

[53] Source: CPC Fast Facts Mid-Year Update: Program Year 2014 Year 2.

Table 5.4. Percentage of patients empaneled by CPC practices at end of PY2015, CPC-wide and by region

Empaneled patients	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Average percentage	99%	99%	99%	98%	99%	100%	99%	98%
Range (minimum–maximum)	82–100%	85–100%	87–100%	83–100%	89–100%	95–100%	87–100%	82–100%

Source: Mathematica analysis of PY2015 Q4 Milestone submission results provided by CMMI.

Notes: This table includes the 466 practices that submitted Milestone data for the last quarter of 2015.

Calculations reflect empaneled patients divided by active patients. The percentage of patients was calculated for each practice. The overall average is based on all practices. These and all Milestone estimates give each practice the same weight, regardless of practice size.

b.2. Risk stratification

In PY2015, practices continued to refine their risk stratification categories to improve risk score accuracy and place fewer patients in the highest risk category, so that care managers could focus resources on these patients. All CPC practices used a combination of data sources to risk-stratify their patients (Table 5.5). Most commonly, practices combined clinical judgment and knowledge of the patient with an algorithm (either published or constructed by their practice). About one-quarter of practices included claims data in their risk-stratification process, and one-fifth of practices incorporated an EHR-generated risk score.

Table 5.5. Types of data used by CPC practices to risk-stratify patients in PY2015, CPC-wide and by region

Types of data used for risk stratification	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Clinical intuition (Practice risk-stratifies patients based on provider's knowledge of patient and global assessment of that patient's risk)	70%	75%	69%	78%	58%	92%	31%	79%
Clinical algorithm—practice developed (Practice risk-stratifies patients based on algorithm constructed by the practice)	60%	60%	81%	32%	45%	79%	53%	69%
Clinical algorithm—based on published algorithm (Practice risk-stratifies patients based on this published algorithm)	43%	52%	19%	66%	54%	19%	71%	28%
Claims (Payer data generated risk scores—for example, HCC scores)	24%	17%	19%	47%	18%	39%	3%	22%

Table 5.5. *(continued)*

Types of data used for risk stratification	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Electronic health records (EHR program identifies and generates risk score using a number of specified clinical variables)	19%	10%	26%	15%	11%	35%	15%	18%
Combination of two or more of the above	100%	100%	100%	100%	100%	100%	100%	100%
Number of practices	**478**	**60**	**72**	**68**	**74**	**75**	**62**	**67**

Source: Mathematica analysis of PY2015 Q1 Milestone submission results provided by CMMI.

Notes: Percentages for all regions are based on 478 practices that submitted Milestone data for the first quarter of 2015. Practices could check all data types that apply.

In the practice survey, 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 dramatically from 5 percent in 2012 to 59 percent in 2014 to 75 percent in 2015 (see Appendix A, Table A.4a). Comparisons of CPC and comparison practices in 2015 also show substantial differences, with 75 percent of CPC practices, versus 37 percent of comparison practices, reporting using standardized risk-stratification processes (see Appendix A, Table A.4a).

Risk stratification in deep-dive practices

By the third year of CPC, deep-dive practices had successfully assigned patient risk scores to most of their patient panels, and many had developed processes for risk-stratifying new patients and updating risk scores of existing patients. Several practices described processes for risk-stratifying new patients and reassessing existing patient risk scores after a hospital visit, change in diagnoses, or condition stabilization, and several regularly review risk scores of high- and moderate-risk patients. A few practices noted plans to automate aspects of risk stratification in the EHR to make the process more efficient and less time-consuming.

The processes that practices used to risk-stratify their patients continued to vary across deep-dive practices. In most of the deep-dive practices, clinicians are responsible for assigning patients' risk scores or approving risk scores assigned by care managers, nurses, or other practice staff. Consistent with Milestone reports, almost all practices use multiple data sources to assign risk scores. Although our protocol did not specifically ask about consistency of risk score assignment within a practice across clinicians, respondents in about one-quarter of deep-dive practices expressed concern that risk scores are still not assigned consistently across clinicians due to different clinicians using different criteria or risk stratification not being a priority within the practice. Across deep-dive practices, in addition to risk scores, clinicians and staff identify patients for care management based on recent events, such as recent ED visits or hospitalizations, or when a clinician determines that a patient would benefit from such services. Practices also use data from quarterly feedback and clinical quality measure reports to identify patients to target for care management services.

Most deep-dive practices refined their risk-stratification criteria to include or expand subjective consideration of patients' family support and social needs when determining a patient's risk score. For example, a patient with a few chronic conditions who has little social support and frequently visits the ED could be at high risk. However, a patient with many chronic conditions who lives with a caregiver that helps him or her manage his or her conditions might be classified at a lower risk level.

Deep-dive practices described several ways in which risk stratification, particularly identifying and tracking high-risk patients, helped improve organization and delivery of care. Practice members noted that being more aware of the needs of high-risk patients helped them better organize staffing resources to support different patient populations. A few practice members noted that this awareness helped improve teamwork, role delegation, and communication. Practice members also mentioned that risk-stratification helps when scheduling high-risk patients' visits, because they can prioritize these patients, schedule follow-up appointments, and plan appointments of appropriate length. A few practices, however, felt that risk stratification is not helpful, because their clinicians know their patients well enough to determine their risk levels.

b.3. Risk-stratified care management

After assigning risk scores to patients, practices provided care management services for those at high or rapidly rising risk who they believed were most likely to benefit from intensive follow-up and self-management support. In addition to these activities, CMS continued to require CPC practices to select and implement one of three "advanced primary care management strategies." Because overlap exists between general care management activities and these three strategies, particularly in self-management support, we first discuss care management more generally, then proceed to practices' experiences with these strategies.

CPC practices in all regions risk-stratified nearly all of their empaneled patients, a Milestone requirement. Among patients who were risk-stratified, CPC practices provided care management to between 10 and 32 percent (Table 5.6).

Table 5.6. Average percentage of patients risk-stratified by and receiving care management from CPC practices at end of PY2015, CPC-wide and by region

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Average percentage of patients risk-stratified	95%	94%	98%	92%	91%	95%	97%	94%
Average percentage of patients receiving care management	21%	28%	10%	25%	10%	24%	32%	20%
Number of practices	**466**	**58**	**71**	**62**	**73**	**75**	**61**	**66**

Source: Mathematica analysis of PY2015 Q4 Milestone submission results provided by CMMI.

Notes: Percentages for all regions are based on 466 practices that submitted Milestone data for the last quarter of 2015. The percentage of patients was calculated for each practice and then averaged overall within each region. Estimates give each practice the same weight, regardless of practice size.

CPC is leading to large self-reported increases in practices' approaches to risk-stratified care management. The largest improvement occurred from 2012 to 2014, and there was some modest additional improvement in 2015, but there is still room for improvement. The CPC practice survey's M-PCMH-A indicated that 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) and rose an additional 0.3 points in 2015. In addition, CPC practices had a statistically significantly higher score relative to comparison practices in risk-stratified care management in 2015 (10.0 for CPC practices versus 7.9 for comparison practices, $p < 0.001$); this domain differed more than any other measured in the M-PCMH-A. (See Appendix A, Table A.2a.)

CPC practices hired or moved staff to new roles for CPC. Staff changes occurred most frequently from 2012 to 2014, and continued less frequently from 2014 to 2015. In the practice survey, 55 percent of CPC practices reported that they had hired or contracted staff to fill new roles or functions in 2015 (versus 88 percent in 2014), and 44 percent reported that they had moved existing staff to new roles (versus 62 percent in 2014) (see Appendix A, Table A.5). The percentages for 2015 are lower presumably because practices had already hired new staff or reallocated staff for care management in the first two years of CPC. Milestone data indicate that CPC practices had increased staff dedicated to care management, between 2012 and 2015.

Practices engage in many activities as part of care management (Table 5.7). According to Milestone data, 97 percent of CPC practices provided post-hospital discharge follow-up, and 95 percent provided post-ED follow-up. Other common care management activities included patient education (91 percent) and care-plan development (86 percent). Home visits by a member of the practice were less common (with less than 15 percent of practices visiting homes for transitions of care or for chronic disease management).[54]

[54] Among the 15 percent of CPC practices that conducted home visits, about two-thirds conducted them for both transitions of care and chronic disease management.

Table 5.7. Average 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
Post-hospital discharge follow-up	97%	98%	100%	99%	91%	100%	98%	95%
Post-ED follow-up	95%	93%	97%	91%	99%	100%	89%	94%
Education and skill building for specific chronic conditions	91%	88%	89%	82%	88%	100%	92%	98%
Referral or connection to community resources	90%	75%	93%	87%	95%	99%	87%	91%
Patient coaching	89%	82%	90%	84%	89%	100%	77%	97%
Care-plan development and documentation	86%	92%	96%	88%	65%	97%	71%	95%
Post-discharge contact	85%	85%	94%	87%	86%	77%	90%	74%
Planned telephone or electronic follow-up or check-in	83%	68%	93%	73%	74%	100%	85%	86%
Transition management (between both sites of care and providers of care)	74%	60%	85%	75%	70%	79%	77%	68%
Referral tracking and follow-up	64%	70%	82%	76%	65%	63%	50%	42%
Planned monitoring of medical data collected at home (for example, blood pressure, weight)	64%	62%	58%	64%	62%	77%	66%	56%
Test tracking and follow-up	63%	57%	65%	73%	65%	79%	69%	33%
Regular (at least quarterly) chart review and monitoring based on care plan	57%	53%	63%	55%	43%	65%	52%	64%
Hospital visits for care coordination and transition management	22%	23%	25%	30%	16%	1%	32%	27%
Other	14%	10%	6%	4%	3%	48%	10%	17%
Home visits for chronic disease management	14%	12%	33%	13%	24%	3%	2%	8%
Home visits for transition management	11%	8%	29%	4%	19%	3%	3%	6%
Number of practices	**476**	**60**	**72**	**67**	**74**	**75**	**62**	**66**

Source: Mathematica analysis of PY2015 Q2 Milestone submission results provided by CMMI.

Notes: Percentages for all regions are based on 476 practices that submitted Milestone data for the second quarter of 2015. Practices indicated all activities that applied.

Deep-dive findings on care management

The size of care managers' caseloads varies somewhat across practices. In deep-dive practices, care managers' caseloads of high-risk patients in 2015 ranged from 50 to 200 patients, with most having a caseload of 100 to 150. In prior years, several care managers noted they had started with larger caseloads, but, because of resource constraints (such as time and staffing resources), several practices had reduced the proportion of patients they put in the highest risk category to make their caseloads more manageable. Some of these decisions to reduce the number of patients in the highest risk group who would receive care management were a function of removing those who did not need or want to engage in care management. By identifying patients unwilling to engage in care management, practices could better devote precious care management resources to high-risk patients who might most benefit from them.

Practices also use different frequencies and forms of contact. In most practices, care managers call high-risk patients monthly, quarterly, or as needed between visits. In several of these practices, care managers also meet face-to-face with high-risk patients during practice visits. In a few practices, clinicians or care managers visit high-risk patients in their homes, in addition to having telephone contact and face-to-face meetings in the practice.

The responsibilities of care managers continue to vary substantially across deep-dive practices. In many deep-dive practices, care managers were primarily responsible for telephone or face-to-face chronic-condition management with patients and follow-up phone calls after hospitalizations and ED visits. But in some practices, care managers were also responsible for pre-visit planning for high-risk patients, pre-visit telephone calls to high-risk patients, and helping patients navigate the health system as well as social services. Some care managers, on the other hand, had more limited responsibilities; for example, they focused narrowly on providing education to high-risk patients with diabetes.

This variation in care manager responsibilities was a function in part of inadequate understanding within practices and health systems of the role of a care manager, as well as health system priorities. Care managers at some practices noted that within the practice, different staff and clinicians did not have the same understanding of the care manager's role. Some staff might ask care managers to perform more clerical tasks or interact with social services in addition to their other responsibilities. Care managers in two practices felt that their larger hospital system prioritized certain activities over others or did not support sufficient care manager staffing at the practice. For example, efforts to reduce readmissions were a priority for many hospitals, and the time a care manager spent on follow-up after an ED or hospital visit could take away from time spent counseling patients on managing their chronic conditions between visits. As a result, care managers in several practices had difficulty prioritizing their many responsibilities.

Many practices noted that care management involved addressing a plethora of patient's nonmedical needs, including transportation, housing, finances, literacy, home health, and food insecurity, making it difficult to prioritize support for patients' medical needs. Several practices perceived addressing patient social needs as a challenging but necessary first step in engaging patients in care management. The few practices that had social work staff noted the benefits of social workers who can help patients with social barriers and connect them to community resources.

Several care managers noted the importance and challenge of establishing relationships with patients and obtaining their cooperation with care management services. Care managers and clinicians described their increasing recognition of the need to foster relationships between patients and care managers, for example, by ensuring the clinicians made an initial in-person introduction to the patient of the care manager ("warm hand-offs"), meeting patients face-to-face, talking to patients at their level, and getting patients to take steps to improve chronic condition management. A few practices, however, noted they did not have enough opportunities for the care managers to meet with patients face-to-face. This limitation may help to partly explain our finding from in-depth interviews of high-risk patients undergoing care management in CPC deep-dive practices. One-fifth of these patients interviewed could not identify the care manager at their CPC practice despite interviewers defining the term "care manager" and providing numerous examples of typical care manager activities (O'Malley et al., under review, 2016).

In PY2015, we also learned in both deep-dive visits and in-depth patient interviews, that outreach to patients by "care managers" from hospitals and health plans during care transitions, posed barriers to coordinated post-discharge care, and contributed to patient confusion about the identify of their care manager. In some regions where health plans or hospitals are operating their own parallel "care management" efforts to reduce readmissions, their lack of coordination with primary care practice care managers risked patients receiving calls from multiple different entities, confusion about recommended discharge care, and fragmentation of care.

Many practices noted the challenges of changing patient behavior. They reported that nonadherence to behavioral change and treatment recommendations make it difficult to provide care management services, noting that nonadherence is caused by poverty, low literacy, age, attitude, or denial. This finding suggests that practices may need tools and more supports (such as social workers) to engage such patients.

Across several deep-dive practices, staff described training opportunities that supported the implementation of care management. These training opportunities were organized by such entities as CPC regional learning faculty, health systems, and pharmaceutical companies. A few practices owned by health systems received training using materials and online modules developed by the health system, or attended regular meetings for all care managers in the system to provide training on aspects of care management, as well as ongoing support in their role. A few care managers described receiving on-the-job training, in which they were partnered with experienced care managers. The content of the training included motivational interviewing, community resources, and workflows for monitoring specific conditions. Overall, care managers in these practices noted that training helped them better understand how to work with patients and the practice workflows necessary to support care management.

The practice team members who contribute to the care plan vary across practices. Most commonly, the care manager develops the care plan (for example, for patients with diabetes) based on the clinician's treatment plan in the EHR and reviews and modifies the care plan with the patient and perhaps the caregiver. In a few practices, the clinician develops the care plans. In a few other practices, a larger care team (for example, care manager, primary care clinician, behavioral specialist, pharmacist, and nurse) work together to develop the care plan.

Care managers seemed to be the predominant users of the care plans. Although in a few practices, care plans had been developed and used by the larger practice care team, more commonly the care manager was the primary user of the care plan, and clinicians did not typically use the care plans on an ongoing basis. In general, practices had not yet fully developed care plans that felt relevant to the clinician and other staff for ongoing patient care.

In many practices, patients were given a copy of the EHR note, a visit summary, or nothing at all, rather than a formal care plan. This limitation may help to explain our finding from in-depth interviews of high-risk patients undergoing care management. Only a handful of these patients described receiving from the practice information resembling a care plan that included their conditions, medications, goals, and strategies to achieve them.

Several practices described challenges with documenting care management encounters and care plans in the EHR. These challenges usually arose because EHRs were developed to support encounter-based care and billable services, rather than ongoing care management services, which are not billable. A few practices developed workarounds to maintain ongoing care management documentation in the EHR. A few practices implemented care management software, which may not have been well integrated with the EHR, even when it came from the same EHR vendor (see the section on Milestone 9 for more details).

Across deep-dive practices, clinicians and practice staff identified many ways in which care management activities are enhancing primary care delivery by improving treatment adherence, reinforcing clinicians' recommendations for patients by helping to restate them when needed in layperson's language, engaging patients in their own care, and increasing patients' ability to change their behaviors, while decreasing physicians' workload. Practice members noted the benefits of care managers reaching out to high-risk patients to build relationships with them, increase patient access to the practice, and provide patients with care outside of practice visits. In addition, care managers spend time with high-risk patients and gather information that physicians may not otherwise have time to gather, or that patients may be uncomfortable discussing with the physician. Engagement with patient on self-management for chronic conditions reportedly helps patients feel more accountable for their health. Members in several practices perceived that care management activities were improving outcomes, including the quality of care, physician satisfaction, patient adherence to treatment, and ED use. In addition, several clinicians noted that the time care managers spend

> "I think [care management] translates into helping patients keep their wellness as a top priority as opposed to, 'Well, I'm just going to go to the doctor for a pill.' Through motivational interviewing and helping [patients focus on priorities] …they just tend to have better outcomes [and feel] the doctor's office cares about them….They're activated, they're invested in their wellness, they know where they belong in the health care system; therefore, they're going to stay healthier and well, and use [fewer] services, because they understand how to care for their own body."
>
> *—Care manager*

helping patients find practical ways to manage their chronic conditions helps patients carry out the clinician's recommendations and reduces the time the clinician must spend counseling patients.

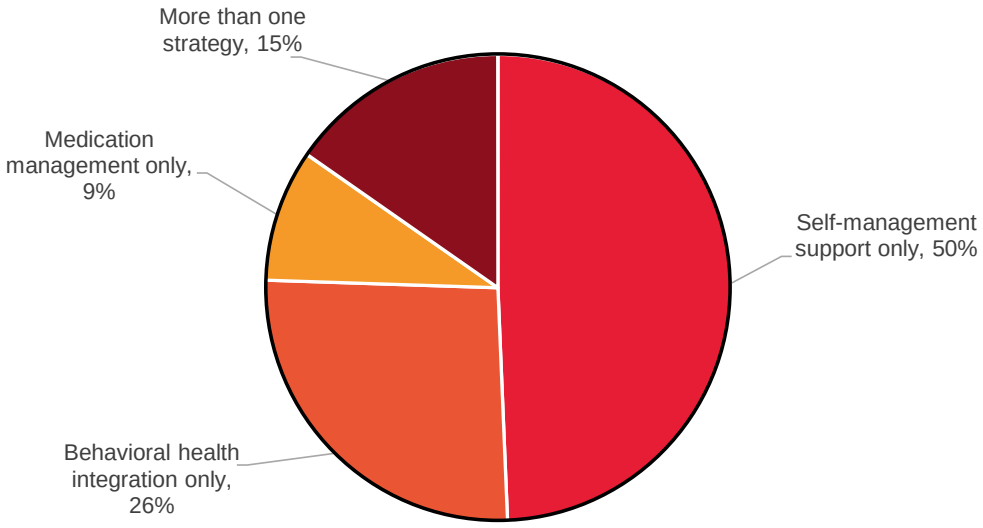
Deep-dive practices that used teamwork supported by systematic communication within the practice, as well as effective role delegation, found risk-stratified care management less burdensome. Communication and effective delegation of work among team members was made easier by information sharing and electronic messaging strategies such as in EHR, email, or face-to-face interactions; regular practice meetings; or morning meetings to review high-risk patients. Trust established between care team members, particularly physicians and care managers, also made the communication and role delegation needed for risk-stratified care management easier. Deep-dive practice members noted that it took several months to establish such trust.

> "I can honestly say [for] some of our patients that are diabetics, their A1C is better [with team-based care management]...I used to think I was a pretty good physician, but it's amazing to me how many patients of mine [have diabetes and hypertension and were] not on an ACE inhibitor, and I've been seeing them for 10 years. I'm like, 'How did that happen?'"
>
> *—Lead physician, noting the benefit of team-based care management*

b.4. Advanced primary care management strategies

Since early in PY2014, CMS has 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 5.5). In 2015, most practices were continuing to pursue the same strategies they selected in 2014.

Figure 5.5. Percentage of CPC practices selecting each of the advanced primary care management strategies for Milestone 2 in PY2015



Source: Mathematica analysis of PY2015 Q1 Milestone submission results; data provided by CMMI.

Note: Three-quarters of practices pursuing more than one strategy were pursuing medication management in combination with either self-management support or behavioral health integration, or all three.

Percentages for all regions are based on 478 practices that submitted Milestone data for the first quarter of 2015.

Notable regional variation existed in the strategies selected (Table 5.8). Higher percentages of practices in Colorado and Oregon selected behavioral health integration. A likely contributing factor to this finding is that both of these states have statewide initiatives, separate from CPC, to address this strategy. Colorado and Oregon were also 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 2015 practice survey (36 percent of Colorado practices and 61 percent of Oregon practices, versus less than 16 percent in most other regions). A larger percentage of Oregon practices (47 versus 22 percent or lower in all other regions) also had access to pharmacists or pharmacy technicians (see Appendix A, Table A.5).

Table 5.8. Advanced primary care management strategies selected by CPC practices for Milestone 2 in PY2015 (percentage selecting each)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Self-management support only	50%	47%	39%	49%	80%	72%	39%	15%
Behavioral health integration only	26%	22%	36%	37%	5%	7%	27%	52%
Medication management only	9%	18%	8%	6%	7%	8%	2%	16%
More than one strategy	15%	13%	17%	9%	8%	13%	32%	16%
Number of practices	**478**	**60**	**72**	**68**	**74**	**75**	**62**	**67**

Source: Mathematica analysis of PY2015 Q1 Milestone submission results.

Patient and caregiver engagement scores on the M-PCMH-A, critical to patient cooperation with self-management support, improved in CPC practices from 6.6 in 2012, to 7.9 in 2014, to 8.5 in 2015. CPC and comparison practices, however, had similar scores in 2015 of 8.5 and 8.2, respectively (see Appendix A, Table A.2a). Individual measures within this domain improved between 2012 and 2015 among CPC practices, but large opportunities for improvement remain (see Appendix A, Table A.4a). The percentage[55] of CPC practices reporting that they "assessed patient and family values and preferences and incorporated them in planning and organizing care" (the highest category of response for this M-PCMH-A item) increased from 15 percent in 2012, to 28 percent in 2014, to 35 percent in 2015. 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 percent in 2014, to 23 percent in 2014, to 25 percent in 2015.

Advanced primary care management strategies in deep-dive practices

Deep-dive practices continued to focus on the same advanced primary care strategy they had selected in the initial year of CPC and were making advances in implementation. Practices implementing self-management support described their approach as evolving from distributing educational materials to patients to also using motivational interviewing to help patients set and track health goals. These practices reported common triggers for referring

[55] Percentages for M-PCMH-A items refer to the percentage of practices who scored in the "top box," or the highest category for a given item, corresponding to an item score of 10–12 (on the scale from 1–12).

patients to receive self-management support, including risk stratification, physician referral, and hospital discharge. Among the practices that were implementing behavioral health integration, a few used CPC funds to hire a behavioral health specialist to conduct brief interventions with patients. Two practices had contracted with local entities to provide behavioral health services, which was less costly than hiring their own staff. Most practices noted using screening tools to identify and monitor patients diagnosed with depression, and a few noted they were also screening for alcohol and other drug addictions. The two practices implementing medication management contracted with or hired part-time pharmacists who meet with high-risk patients face-to-face and speak with them over the telephone to provide medication-management services. As Milestone data reflect, some practices were pursuing medication management as a second advanced primary care strategy, because it is so integral to primary care. These practices were increasingly recognizing the need to reduce the potential for adverse effects and drug interactions among high-risk patients taking multiple medications.

In many deep-dive practices, practice members believed the advanced primary care strategy they chose was improving patient care. Self-management support increased practices' focus on using motivational interviewing to help patients set meaningful goals, and practice members perceived that self-management support increased patients' engagement in their own care. Practices reported that behavioral health integration increased practices' (1) awareness of patients' emotional and psychosocial needs, and (2) capacity to engage patients in necessary behavioral health care. Practice members believed that medication management increased patients' compliance with their medications.

Care managers, behaviorists, and pharmacists in several practices described having to overcome resistance from clinicians and other staff to integrating their roles into practice workflows. However, practices that had successfully integrated these roles into practice workflows described highly structured processes for doing so and leadership support for developing relationships between new staff and existing clinicians and staff in the practice. In both practices implementing medication management, the pharmacists had to initiate their roles in the practices, which was challenging. Care managers and pharmacists also described gradually building relationships with clinicians and the difficulty of obtaining clinician support because of clinicians' many responsibilities.

> "If a patient has more than one chronic disease and is depressed, they're not going to feel like taking care of themselves. They're not going to feel like taking the medication that they need to take on a daily basis…Several of our providers have identified that being able to have a behavioralist in the office has helped them to manage their patients much…more effectively."
>
> *—Care manager, on the importance of behavioral health integration*

Challenges specific to implementing the advanced primary care strategies include identifying appropriate patients to refer to behavioral health services, a lack of behavioral health providers with appointments available to whom patients can be referred, and patient resistance to engaging in medication management and self-management support.

5.4.2. Milestone 3: Access and continuity

In PY2015, Milestone 3 required that practices: (1) attest that patients have access 24 hours a day, seven days a week, to a care team practitioner with real-time access to the EHR, (2) continue at least one form of asynchronous communication (such as email and patient portals)

and make a commitment of timely response, and (3) measure visit continuity of patients with the provider to whom they are empaneled.

a. Overview of findings

The second largest change, as measured by the M-PCMH-A, was in access and continuity. For Milestone 3, patient portals were the option most frequently pursued by practices to enhance access, likely because Stage 2 Medicare and Medicaid EHR Incentive Programs (Meaningful Use) also emphasized patient portals. Most practices offered patient portals for messaging and other activities, but practice staff continued to report that older patients' lack of comfort with technology, technical glitches, and a lack of practice resources posed challenges to getting patients to enroll in and use portals. Because of the Meaningful Use emphasis on portals, other avenues for enhanced access (as measured by the Milestone data) seemed to have received less attention from practices. Deep-dive and survey data, however, indicate that practices continued to improve wait times for patients for appointments, telephone access to the practice for patients, and after-hours access to clinicians via email or telephone, or in person.

b. Detailed findings

b.1. Enhanced-access activities for all CPC practices

In their Milestone reporting, all practices reported that they provided on-call practitioners with access to their EHR 24 hours a day, seven days a week, as required by CPC. Practices most commonly selected patient portals as their enhanced-access activity, with 96 percent of CPC practices providing them (Table 5.9). However, as we discuss later in this section, the deep-dive practices suggested that few patients were using the portals. On average, fewer than one-quarter of practices pursued each of the other electronic methods to expand access (Table 5.9).

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
On-call clinician has 24/7 access to EHR	100%	100%	100%	100%	100%	100%	100%	100%
Patients send and receive messages through a patient portal (as defined by Meaningful Use)	96%	97%	100%	95%	90%	99%	97%	95%
Secure email	21%	26%	31%	11%	21%	23%	18%	17%
Other	12%	22%	1%	18%	4%	23%	11%	8%
Web-enabled visits other than through a patient portal	9%	3%	3%	3%	3%	27%	2%	20%
Text messaging	9%	16%	6%	11%	4%	12%	13%	6%
Telemedicine/Remote monitoring	5%	3%	3%	5%	5%	0%	0%	21%

Table 5.9. *(continued)*

Selected enhanced-access activities	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
In progress/we are currently building this capacity	2%	0%	0%	2%	10%	0%	0%	3%
Number of practices	**466**	**58**	**71**	**62**	**73**	**75**	**61**	**66**

Source: Mathematica analysis of PY2015 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 466 practices that submitted Milestone data for the last quarter of 2015. Practices could select all activities that applied.

The CPC practice survey identified a substantial increase, from 25 percent in 2012, to 62 percent in 2014, to 68 percent in 2015 of CPC practices reporting patient after-hours access to *clinicians* was available via email, by telephone, or in person (Appendix A, Table A.4a). Although this increase may reflect the influence of a combination of CPC and other outside factors, CPC practices were considerably more likely to report this access in 2015 than comparison practices (68 versus 41 percent). The survey also showed large increases from 7 to 62 to 77 percent respectively (from 2012 to 2014 to 2015) of CPC practices reporting availability of patient communication with the *practice team* through email, text messaging, or accessing a patient portal.[56] The difference favoring the CPC practices is smaller: in 2015, 77 percent of CPC practices versus 71 percent of comparison practices reported this type of communication (see Appendix A, Tables A.4a).

b.2. Enhanced-access activities in deep-dive practices

To improve patient access to care and continuity of care, deep-dive practices are implementing a variety of approaches. While the Milestone-reported data on access focus on electronic access, the deep-dive data allow us to get additional information, beyond electronic access, on how practices were enhancing access. First, most deep-dive practices are enrolling patients into practice portals, where they can review test results, send messages to their providers, request medication refills, and schedule appointments. Second, many deep-dive practices are using same-day appointments to improve access. Third, several practices expanded their business hours to include early morning, evening, and Saturday appointments, and several used on-call staff (nurses and/or clinicians) to triage patient issues after hours, helping patients determine whether they should go to the emergency room or wait until the next business day to schedule an office visit. Fourth, a few practices hired additional clinicians to increase the number of available appointments, or hired nurses to address patient needs by telephone. Finally, a few (typically system-owned) deep-dive practices had affiliated after-hours clinics that used the same EHR as the practice.

[56] The discrepancy between Milestone reports and practice survey estimates of CPC practices' portal use is likely due to wording differences between the two data sources. In the practice survey, portals were referred to in the best ("top box") category as part of the M-PCMH-A item on access, which 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 asked practices to check a box if their enhanced-access efforts included patient portal messages.

To address continuity of care, practices continued to schedule patients with their usual clinician whenever possible. In many practices, the EHR lists this clinician in the banner so that the scheduler can facilitate this effort. A few of the deep-dive practices emphasized educating patients about the practice's care teams, so patients would know that they could see a member of their physician's team, which may allow them to be seen sooner, and that their usual physician would be kept informed of their care. Finally, practices encouraged patients to request their usual clinician when scheduling visits.

In many practices, support staff helped clinicians handle patient messages from the portal. Staff triaged portal messages for clinicians, identified urgent messages for clinicians, and responded to less medically complex requests (such as scheduling appointments). Practice clinicians and staff noted that using the portal saved time that would have otherwise been spent calling patients repeatedly and "playing phone tag."

Several practices reported that patients liked having access to their medical information through the portal. Practice clinicians and staff felt that the portal allows patients to have a more active role in their health by empowering them to manage their own conditions via secure messaging with practice staff, an ability to view test results promptly, and access to their medical records. A care manager, for example, noted that a patient with multiple chronic conditions became more engaged in her care via information on the portal. Thus, a subsequent update of her risk score by the practice found her to be at a lower risk level.

> "I have one 78-year-old female with multiple chronic conditions, and she has multiple specialists. She's gone from a 5 to a 4, as far as risk level, because she now is the carrier of the tools [on the portal] on how to manage these things."
>
> *—Care manager*

Practice staff cited older patients' lack of comfort with technology, technical glitches, and a lack of resources as challenges in getting patients to enroll in and use portals. Many practices reported that having a large proportion of elderly patients on their panel was a challenge to portal use, because elderly patients often did not have access to computers and were less interested in using new technology. Glitches in portal software also challenged portal use by practice staff and patients. For example, many practices reported difficulty logging in, poor compatibility between the portal and the practice's EHR or different Internet browsers, and problems exchanging messages between providers and patients. One practice learned during a PFAC meeting that patients were assigned portal user names and passwords at checkout that did not work when these patients tried to log into the portal at home. Practices were communicating with vendors to address these technical problems. In a few practices, administrators believed that new staff were needed to explain the portal to patients and enroll patients, because these tasks were too much for existing staff in addition to their current responsibilities.

> "They can read a poster. They can read a handout that we can give. They might hear of something through the hospitals [about the portal] . . . but until that person actually sits and does a one-on-one [with the patient to access the portal] and explains how easy it is for them to get in there, it doesn't work…you have that one-on-one to talk to them."
>
> *—Practice manager*

Despite these challenges, use of portals seemed to be growing somewhat. To boost patient enrollment and use of the portal, a few deep-dive practices used volunteer interns or medical assistants and held contests for staff and patients. In most practices, front-desk staff introduce patients

to the portal at check-in or check-out. A few practices, however, also use other staff (such as medical assistants or volunteer interns) to sit next to the patients in the waiting room with tablets and provide hands-on assistance with logging in and using the portal. Other deep-dive practices held competitions among practice staff to increase enrollment; one practice attributed the enrollment of 40 percent of their patients into the portal to these competitions. A few practices held raffles to encourage patients to sign up for the portal.

As of mid-2015, few deep-dive practices were measuring and tracking continuity of care with the provider to whom patients are empaneled, as required by Milestone 3. At the time of our 2015 site visits, this new reporting requirement was confusing to practices; they were not sure how to measure or track it. For example, some practices were unclear as to how they should define continuity of care. Others expressed concerns that tracking continuity of care with an individual clinician did not align with team-based care, in which patients may see a nurse practitioner or physician assistant for an acute visit, rather than their usual (empaneled) clinician, to enhance access. Other practices were still trying to develop processes to measure continuity and expressed concern that they would have to track continuity manually—for example, by counting the number of visits a patient had with his or her usual (empaneled) clinician versus with someone else in the practice.

5.4.3. Milestone 4: Patient experience

In PY2015, Milestone 4 required practices to (1) conduct a practice-based patient survey monthly, (2) convene a PFAC quarterly, or (3) conduct regular surveys and convene a PFAC periodically. They were also required to specify changes to the practice that were a result of, or influenced by, the practice survey/PFAC activities and to continue to communicate to patients (electronically, on posters, via pamphlets, or in a similar manner) the changes the practice is implementing as a result of the survey or PFAC.

a. Overview of findings

An increasing percentage of practices (63 percent in 2015) felt that patient feedback from surveys and/or PFACs was “very important” to improving the care they provide to patients. For Milestone 4, Milestone data indicate that surveys continued to be the most common method used for eliciting patient feedback (53 percent of practices conducted monthly or quarterly surveys); however, use of PFACs rose from 20 percent in 2013 to 42 percent in 2014 to 47 percent in 2015. In 2015, a few more deep-dive practices started PFACs, and some noted that feedback from PFACs was more useful than data from patient surveys for enacting change, because PFACs permitted more nuanced discussion of patients’ concerns and experiences. As a result of this Milestone work, practices improved scheduling, office hours, appointment types, front-office staffing, waiting areas, and continuity of care between patients and clinicians.

Nonetheless, challenges remain gathering patient feedback. Practices reported challenges with surveys including survey fatigue and limitations in what they ask. Challenges to implementing PFACs included recruiting a diverse group of patients and scheduling PFAC meetings during times convenient for both practice members and patients. Practices also are challenged by how to use PFAC feedback in an ongoing way to guide practice improvements. Interviews with deep-dive practices suggest that there is also more room for practices to share

with their patients the findings and improvements they are making based on feedback from patient surveys and PFACs.

b. Detailed findings

b.1. Patient experience activities in all CPC practices

The proportion of practices that implemented a PFAC increased from 20 percent in 2013 to 42 percent in 2014 to 47 percent in 2015 (Table 5.10). Use of PFACs was most common in CPC practices in Colorado and least common in Ohio/Kentucky.

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	53%	62%	13%	66%	58%	80%	60%	34%
Quarterly PFAC only	25%	32%	44%	12%	26%	9%	15%	40%
Quarterly survey and semi-annual PFAC	22%	7%	43%	22%	16%	11%	26%	25%
Number of practices	**478**	**60**	**72**	**68**	**74**	**75**	**62**	**67**

Source: Mathematica analysis of PY2015 Q1 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 478 practices that submitted Milestone data for the first quarter of 2015.

PFAC = patient and family advisory council.

Practice survey results on the use of patient surveys are consistent with the Milestone data. Comparing across the three years, a higher percentage of CPC practices overall in 2015 (36 percent versus 33 percent in 2014 and 11 percent in 2012), and in each of the seven regions, said that patient survey data on patient care experiences were "routinely provided as feedback to practice teams and transparently reported externally to patients, other teams, and external agencies" (see Appendix A, Tables A.4a–A.4b). Some of this difference may be due to CPC, and some to other changes affecting practices: 28 percent of comparison practices (versus 36 percent of CPC practices) reported performance in this highest response category for this item in 2015 (see Appendix A, Table A.4a). The CPC practices also believed collecting and using patient feedback was important to improve quality of care and patient experience. In 2015, 63 percent of CPC practice survey respondents felt this activity was "very important" to improving the care it provides patients, and 31 percent felt it was "somewhat important." These percentages grew from 55 and 41 percent, respectively, in 2014.

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 to 36 percent in 2015 (see Appendix A, Table A.4a). Twenty-eight percent of all CPC practices in 2015 (about the same as in 2012 and 2014) reported the next highest category of response, indicating that they "regularly collected and incorporated PFAC feedback into practice improvements on an ad hoc basis."

Milestone data for 2015 indicate that practices most often made improvements based on feedback from PFACs and/or patient surveys in three areas: (1) changes to scheduling, hours, appointment types (48 percent); (2) changes to front-office staffing and waiting areas (46 percent); and (3) strategies to improve continuity of care and relationship between patients and clinicians/care team (42 percent).

b.2. Activities gathering patient experience in deep-dive practices

Practices distributed patient surveys by mail, by email, or at the practice. Among practices that specified how they administered the survey, most used Press Ganey or a similar organization that administered its own proprietary survey or the Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys, or the practice itself administered CAHPS or its organization's own surveys; a few created their own surveys. In most of these practices, clinicians and staff discussed survey results in staff meetings.

Practices that used surveys had mixed opinions on their usefulness and validity. Although some practices felt the surveys were helpful and facilitated practice change, several practices felt that the surveys provided little actionable information regarding what they could improve. For example, respondents noted that closed-ended survey items did not allow them to dig deeper to fully understand patient experiences and how they might be addressed. Practices also expressed concern about the validity of the surveys, because of small sample sizes; perceived survey fatigue among patients, which led to refusals to complete the survey or to patients not taking the survey seriously; a tendency for patients with negative views to be more likely to respond; and the fact that questions were open to patients' interpretations and expectations.

Some practices commented that feedback from PFACs was more useful for making change than data from patient surveys, because their interactive discussions allowed more probing about patient concerns, experiences, and how they might be addressed. In general, practices using PFACs found them helpful in gathering feedback from patients and providing impetus for change. Many respondents commented that the PFAC members' feedback led to practice changes (described below).

> "I think that a patient and family advisory council is very beneficial, because you can't ask a survey [respondent further] questions. You can't [probe and ask] 'Well, why did you check that box? What do you think about this, and what's the barrier here? What would make you feel better about this?' So I think just being able to have that open communication with the PFAC has been really helpful."
>
> *—Care manager*

Practices vary in their approaches to organizing PFACs, including how they recruit patients, develop agendas, facilitate the meeting, and decide whether to include clinicians. To recruit patients to the PFAC, a few practices asked for volunteers, but most relied on clinicians and staff to nominate patients who were likely to give constructive feedback, provide their opinions, engage in a group setting, and commit the necessary time. A few practices found it challenging to recruit a representative mix of patients for PFACs, because it was difficult to find a time that worked for older, retired patients; younger, working patients; and patients with children. Many practices created agendas before PFAC meetings, took minutes, and/or designated someone (most commonly a staff member) to run the meeting. A couple of the PFACs had official bylaws, with one including term limits for PFAC members to ensure turnover. The other half included clinicians such as physicians, midlevel providers, and nurses in their PFACs and noted that

PFAC members liked having the clinicians present. About half of the practices did not include clinicians in their PFACs, believing that patients might be more open to sharing without clinicians present; however, they still included at least one staff member (such as a practice manager or care manager) to facilitate the meeting. PFACs met in the practices, in a space owned by their larger health system, or, in two cases, in restaurants, and a few of the deep-dive practices provided a meal for the meeting.

Many deep-dive practices reported making changes because of PFACs and/or surveys, typically in patient education, access to the practice, and wait times. Several practices changed the format and content of patient education information displayed in the practice, using such methods as videos in the waiting room, or educational posters on preventive care and how to reach the practice after hours. Other practices addressed feedback about patient access by (1) changing callback procedures to ensure prompt responses to patients, (2) adding telephone lines or expanding the hours patients could call the practice, (3) expanding clinician hours, (4) extending walk-in hours, (5) addressing technical problems with the patient portal, (6) redesigning the practice website to make it more useful and user friendly, and (7) making the check-in process more efficient during the practice's busiest times. A few practices described addressing patient feedback through staff training; they discussed courtesy and attitude when interacting with and in front of patients, and they held staff morale-building activities that they expected to improve staff interactions with patients. Finally, a few of the deep-dive practices emphasized educating patients about the practice's care teams, so patients would know that they could see a member of their physician's team, perhaps allowing them to be seen sooner, and that the physician would be kept informed of their care.

Several deep-dive practices were communicating to patients about the changes they had made in the practice based on feedback from PFACs or patient survey data. Practices with PFACs often shared feedback from previous PFAC meetings and a description of changes made in the practice with the PFAC members, through minutes from previous meetings or summaries during the next meeting. The description of practice changes was often included in the current meeting's invitation, presentation, or agenda. Although practices had improved information sharing with PFAC members, sharing was mostly limited to PFAC members, rather than to the practice's general patient population, as intended by the Milestone. Of the practices conducting surveys, some shared the results with patients on fliers or posters in waiting rooms or exam rooms, and a subset of practices included information about practice changes based on the results. A few practices did not have an organized way to share results with their patients. Two practices also posted survey results on their practice websites.

5.4.4. Milestone 5: Use data to guide quality improvement

To meet the requirements of Milestone 5 in PY2015, practices were expected to identify at least three eCQMs and one high-cost area (from their practice feedback report) on which to focus quality improvement, and a strategy to reduce those costs while maintaining or improving quality. Beyond tracking and measuring improvement, practices were expected to build new capabilities for supporting quality improvement. The CPC Program Year 2015 Implementation and Milestone Reporting Summary Guide suggested several changes practices could make to support QI, including training staff on QI methods, sharing data and progress reports throughout the practice, and developing regular meetings to plan and monitor improvement. As part of these

efforts, practices were expected to meet EHR Meaningful Use requirements. CMMI suggested that practices work with EHR vendors to develop solutions to meet Milestone 5 reporting requirements.

a. Overview of findings

Findings from the practice survey 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. 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. Deep-dive respondents often noted that the reporting requirements for this Milestone, specifically regarding development of consistent data documentation in the EHR and processes for reporting, were time-consuming and resource-intensive. 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.

b. Detailed findings

b.1. Quality improvement and eCQM reporting for all practices

In addition to the annual eCQM reporting requirement of 9 out of 13 measures, for Milestone 5, practices had to perform continuous quality improvement using eCQM data on at least 3 of those measures. 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 2014), (2) colorectal cancer screening, and (3) breast 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	80%	69%	85%	66%	86%	87%	77%	88%
Colorectal cancer screening	78%	84%	72%	81%	60%	96%	62%	88%
Breast cancer screening	67%	79%	52%	81%	55%	68%	54%	80%
Controlling high blood pressure	58%	55%	58%	82%	60%	36%	46%	73%
Influenza immunization	51%	57%	55%	61%	52%	49%	41%	42%
Tobacco use: screening and cessation intervention	43%	59%	39%	48%	41%	32%	18%	62%
Pneumonia vaccination status for older adults	39%	47%	37%	58%	26%	35%	20%	52%

Table 5.11. *(continued)*

eCQM	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Diabetes LDL management	38%	40%	45%	42%	37%	11%	28%	65%
Falls: screening for future fall risk	34%	41%	45%	39%	33%	21%	11%	45%
Screening for clinical depression and follow-up plan	34%	34%	34%	26%	27%	23%	31%	61%
Documentation of current medications in the medical record	31%	45%	20%	37%	33%	13%	16%	56%
Ischemic vascular disease: complete lipid panel and LDL control	23%	33%	23%	8%	16%	45%	2%	29%
Heart failure: beta-blocker therapy for left ventricular systolic dysfunction	9%	17%	4%	0%	12%	1%	5%	26%
Number of practices	**466**	**58**	**71**	**62**	**73**	**75**	**61**	**66**

Source: Mathematica analysis of PY2015 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 466 practices that submitted Milestone data for the last quarter of 2015. Because practices had to identify at least three eCQMs, these percentages are not mutually exclusive.

eCQM = electronic clinical quality measure.

Practices also had to indicate whether they reviewed eCQM data at the panel or practice level. (Table 5.12) Most practices reviewed the data at both levels, but rates for this measure were particularly high in Colorado and Ohio/Kentucky.

Table 5.12. Percentage of CPC practices reviewing eCQMs at each level, CPC-wide and by region

eCQM	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
At the panel level	2%	7%	0%	5%	0%	3%	0%	2%
At the practice level	28%	43%	17%	29%	37%	4%	33%	35%
At both the panel and practice level	67%	47%	80%	63%	63%	93%	59%	59%
Unable to review the eCQM data	3%	3%	3%	3%	0%	0%	8%	5%
Number of practices	**466**	**58**	**71**	**62**	**73**	**75**	**61**	**66**

Source: Mathematica analysis of PY2015 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 466 practices that submitted Milestone data for the last quarter of 2015.

eCQM = electronic clinical quality measure.

Practices engaged in various types of changes in response to their eCQM activities (Table 5.13). The most commonly mentioned were the use of pre-visit planning, huddles, and plans of care for high-risk patients.

Table 5.13. Percentage of CPC practices choosing each type of practice change that was influenced by their eCQM review activities, CPC-wide and by region

Type of practice change	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Pre-visit planning	56%	50%	28%	65%	48%	65%	74%	65%
Huddles	49%	34%	61%	37%	44%	63%	39%	62%
Plans of care for patients at high risk	45%	38%	37%	55%	27%	43%	64%	55%
Shared decision making protocols	39%	26%	39%	35%	38%	44%	25%	62%
Training	39%	33%	34%	50%	42%	39%	28%	45%
Care transitions workflows	38%	41%	48%	31%	30%	40%	38%	38%
Health education	36%	55%	18%	34%	30%	43%	36%	36%
Medication management	32%	31%	21%	27%	33%	28%	43%	45%
Risk stratification	28%	24%	23%	37%	36%	27%	11%	36%
Coordination of care with specialists	27%	28%	30%	23%	26%	32%	28%	24%
Self-management support protocols	22%	22%	24%	10%	21%	37%	30%	9%
Condition-specific support for self-management of common conditions	21%	14%	28%	13%	25%	35%	16%	9%
Coordination of care with mental health and behavioral health providers in the community	19%	14%	20%	35%	12%	3%	31%	23%
Other	16%	5%	17%	5%	5%	53%	5%	12%
Using community-based self-management support and wellness resources	15%	12%	10%	27%	12%	28%	0%	17%
Number of practices	**466**	**58**	**71**	**62**	**73**	**75**	**61**	**66**

Source: Mathematica analysis of PY2015 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 466 practices that submitted Milestone data for the last quarter of 2015. Percentages sum to more than 100 percent, because practices could choose multiple responses.

Turning to findings from the practice survey, the M-PCMH-A has a broader focus than the Milestone data. The survey captured the use of data to guide QI, as well as staffing, resources, and processes for QI. CPC practice survey responses to the M-PCMH-A domain on "continuous improvement driven by data" increased 2.6 points over the three years, from 5.7 in 2012 to 8.0 in 2014 to 8.3 in 2015 (see Appendix A, Table A.2a). The 2015 difference between CPC and comparison practices was 8.3 versus 7.7 (p = 0.005) (see Appendix A, Table A.2a). The proportion of CPC practices reporting the highest category of the M-PCMH-A score for each of the following items within the domain of "continuous improvement driven by data" increased over the three years of the survey (2012, 2014, 2015) but also indicated substantial room for continued improvement (see Appendix A, Table A.4a).

- "QI activities were conducted by practice teams supported by QI infrastructure with meaningful involvement of patients and families" increased from 6 to 19 to 21 percent respectively in 2012, 2014, and 2015.

- "Performance measures were comprehensive, available for practice and individual providers, and fed back to individual providers" increased from 36 to 65 to 75 percent.
- "Staff, resources, and time for QI activities were fully available" increased from 5 to 18 to 21 percent.
- "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 to 24 percent.
- "All staff shared responsibility for conducting QI activities," reflecting more teamwork, increased from 15 to 37 to 41 percent.

b.2. Quality improvement and eCQM reporting in deep-dive practices

Quality improvement

While practice-level QI efforts in the deep-dive practices were typically ad hoc, practices did engage in QI activities; in some system-owned practices, practices conducted QI as part of centralized efforts. In practices that did have regular QI meetings, QI teams included members from across the practice and used formal QI methods (such as plan-do-study-act cycles) for changing care delivery processes. Practices that were part of larger systems often relied on centralized QI efforts to drive practice-level change. These efforts ranged from system-level review of feedback reports to identify improvements that practice-level teams addressed, to a formal system-level QI process to identify improvements and decide on practice-level workflow changes for practice-level staff to implement, often without their input on the decision. Several deep-dive practices that were part of larger systems had CPC project managers who worked across all system-affiliated practices to standardize and support practice-level improvements. In some of these cases, practice-level staff indicated they did not receive feedback reports (from Medicare or other payers). Although a few practices with substantial QI experience regularly implemented QI processes, we did not identify any practices that provided ongoing or planned QI training to practice members beyond that received through regular participation as a member of the practice's QI team.

Use of Medicare quarterly feedback reports for quality improvement

In many deep-dive practices, use of data from feedback reports was limited to identifying gaps in care or patients to target for care management and, therefore, supported ad hoc discussion of improvement opportunities rather than formal QI efforts. Many practice members reported that the focus on tracking and reporting data for Milestone 5 helped them identify patients who needed care management services, and using these data increased their awareness of the importance of identifying and addressing those needs. Practices taking this approach to improvement typically did not have regular meetings to plan practice changes and did not report efforts to build practice-level QI capacity or change workflows to improve quality. However, practice members reported that, in some cases, sharing data more widely throughout the practice had led to changes and improvements by using the competitive drive of clinicians and staff to improve quality outcomes.

> "Just opening up the data to the providers, and sharing it on a regular basis, has changed behaviors….There's no question."
>
> *—Lead physician*

> "Sometimes higher cost doesn't mean poorer care….If we're managing heart failure, sometimes that does involve some fairly expensive utilization…and just people getting older, getting sicker, getting new problems."
>
> *—Physician*

Practice members across the deep-dive practices identified several challenges in using payers' feedback reports to guide QI, including inconsistent access to patient-level data, reports that represent small numbers of patients, and reports that are not aligned across payers in measurement methodologies and reported outcomes. Practices that were part of large systems often received PDF files created by their system that included a tailored summary of their practices' data from the Medicare quarterly feedback reports. In some of these practices, practice respondents indicated they did not receive patient-level data. Some smaller, independent practices lacked the time and resources to access and analyze the data from quarterly reports. Reports from some payers represented small numbers of patients, making it challenging for small practices to identify whether the data were meaningful. The lack of alignment across the payer reports in some regions meant that practices sometimes received conflicting signals on the same quality measure from different payers. Staff in several practices questioned the accuracy of the reports not generated from their own clinical data systems. Some clinicians expressed frustration with being held accountable for measures they viewed as outside of their control (such as hospitalizations), and others were concerned that the focus on costs could lead to a sacrifice of quality.

The time lag for claims in the Medicare feedback reports was a common source of frustration and reportedly limited the usefulness of the reports. A lag in claims-based reports exists, at present, because claims data can never be available in real time. CMS needs to allow sufficient time for claims to be submitted, and the creators of the feedback reports must clean process and analyze the data before sending it to practices. In many instances, practice members stated that having real-time (or close to real-time) access to data feedback would be the most effective way to monitor and improve health outcomes or reduce costs. The three- to six-month lag between service use and Medicare data reporting made it difficult for practice members to determine whether practice-level improvement efforts were effective. One CPC project manager likened using the lagged data to guide improvement to driving a car using your rearview mirror. Despite these challenges, patient-level data feedback was widely seen as useful trend data to support practices' longer term efforts to identify gaps in care and to target specific patients for care management or other interventions. For example, practices sometimes used the reports to identify patients who were high users of ED services, so they could follow up with them to identify any unmet needs.

> "We get 99 percent of our payment within three to four weeks, so why do we have to wait six months to see that data?"
>
> *—Lead physician*

Use of health IT for quality improvement

Deep-dive practice members reported that CPC resources were helpful in developing practice capacity to report data derived directly from clinical care to identify actionable QI targets. As part of these data-reporting and QI target identification efforts, CPC required practices to meet EHR Meaningful Use requirements and develop the capability for practice-level reporting of eCQMs. Some deep-dive practices had to work with EHR vendors to develop solutions to meet this requirement.

Reported changes in deep-dive practices' use of health IT to support QI efforts include:

- **Using dashboards developed by EHR vendors** to monitor eCQMs
- **Dedicating staff** at the practice or system level to run reports that integrate EHR data and data from other sources to monitor quality indicators
- **Developing or expanding the capacity of the EHR** to identify improvement opportunities and gaps in care

Many deep-dive practice members reported ongoing difficulty with accessing and using data to support quality improvement. In many practices, these difficulties stemmed from a lack of practice capacity to report on quality measures, lack of specific EHR functions (such as no EHR ability to produce reports from prior years for comparison and monitoring), and incomplete documentation of clinical activities by practice members. Practice members typically attributed this incomplete documentation to clinicians entering unstructured data, reports pulling data from different EHR fields than those used in clinical care, inadequate or absent health information exchange capabilities, and the need to work with scanned results of diagnostic images or lab results that did not automatically populate the EHR.

5.4.5. Milestone 6: Care coordination across the medical neighborhood

In PY2015, Milestone 6 required practices to build on PY2013 and PY2014 activities to implement two of the following three options: (1) track the percentage of patients with ED visits who received a follow-up phone call within one week, (2) contact at least 75 percent of patients who were hospitalized in target hospitals within 72 hours or two business days, or (3) enact care compacts/collaborative agreements with at least two groups of high-volume specialists in different specialties to improve transitions.

a. Overview of findings

For Milestone 6, CPC practices made progress from 2012 to 2015 on the care coordination tasks of follow-up after ED visits and hospital discharges as measured by the Milestone data and the practice survey, but they still had opportunities for improvement. Findings from the deep-dive interviews also indicated that many practices refined workflows, and some entered into agreements with hospitals to which they most frequently admitted patients to obtain discharge data, so practices could contact patients promptly. CPC practices were substantially more likely than comparison practices in 2015 (77 versus 58 percent in 2012) to report that they routinely followed up with patients seen in EDs or hospitals because of established arrangements with the ED or hospital to track patients (see Appendix A, Table A.4a). Considerable room for improvement remains in the area of care compacts with specialists: CPC practices were less likely to have such care compacts in place compared with comparison practices (although their data-exchange capabilities with specialists were similar). Like practices nationwide, CPC practices and their medical neighborhoods have substantial opportunities to improve how they coordinate and exchange information with specialists.

b. Detailed findings

b.1. 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 5.14). Only 19 percent of practices elected to use care compacts or collaborative agreements with specialists, ranging from a high of 28 percent in Colorado to a low of 4 percent in Oregon.

Table 5.14. 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	94%	93%	86%	94%	97%	99%	94%	96%
Hospital discharge follow-up	93%	93%	92%	93%	88%	92%	94%	100%
Care compacts/collaborative agreements with specialists	19%	20%	28%	19%	19%	23%	16%	4%
Number of practices	**478**	**60**	**72**	**68**	**74**	**75**	**62**	**67**

Source: Mathematica analysis of PY2015 Q1 Milestone submission results.

Note: Practices could select all activities that applied. Practices arranged care compacts/collaborative agreements most often with the following specialist types: cardiology (chosen by 55 percent of practices that had care compacts), gastroenterology (33 percent), obstetrics/gynecology (28 percent), orthopedic surgery (28 percent), neurology (23 percent), oncology (22 percent), allergy (15 percent), endocrinology (15 percent), behavioral health (14 percent), dermatology (14 percent), and pulmonology (13 percent).

CPC practices' receipt of hospital discharge data is not automatic. Only 43 percent of practices received patient-specific alerts following a hospital discharge (Table 5.15). Most commonly, practices had to reach out to hospitals to obtain hospital discharge information. Practices most commonly had to log into the hospitals' portals to "pull" this information.

Table 5.15. Percentage of CPC practices obtaining hospital discharge information through each option, CPC-wide and by region

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
How practice received hospital discharge information in the last quarter:								
Practice pulls information: practice periodically seeks updates from hospital on discharges	70%	81%	57%	66%	56%	70%	93%	70%
Hospital pushes information: hospital sends patient-specific alerts to the practice following a hospital discharge	43%	28%	55%	64%	34%	59%	12%	39%
Hospital pushes information: hospital sends a periodic report for all patients discharged from the hospital in that time frame	34%	33%	38%	43%	59%	29%	9%	27%

Table 5.15. *(continued)*

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Communications vehicle through which practice obtained hospital discharge information:								
Access to hospital EHR or portal	76%	83%	78%	86%	73%	93%	37%	74%
Fax	46%	63%	48%	86%	52%	16%	21%	45%
Health information exchange	34%	15%	38%	38%	34%	72%	5%	26%
Phone	29%	35%	31%	53%	41%	14%	16%	17%
Other	24%	15%	15%	10%	3%	30%	63%	30%
Email	17%	15%	31%	12%	41%	1%	2%	18%
Number of practices	**433**	**54**	**65**	**58**	**64**	**69**	**57**	**66**

Source: Mathematica analysis of PY2015 Q4 Milestone submission results.

Notes: This question was limited to the 433 practices (of the 478 practices that reported data in Q1) that indicated that they are working on the hospital discharge follow-up care coordination option.

Respondents could select all that applied.

Results from the practice survey suggest that practices increased their care-coordination activities over time, consistent with Milestone 6, but they still had room for improvement. The practice survey score for the M-PCMH-A domain of coordination of care across the medical neighborhood increased from 6.7 to 8.0 to 8.5 from 2012 to 2014 to 2015, respectively (see Appendix A, Table A.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 from 2012 to 2014 to 2015 (see Appendix A, Table A.4a):

- From 26 to 64 to 74 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 13 to 35 to 51 percent on "consistent receipt of information on patients from community hospitals and EDs within 24 hours after the event."
- From 35 to 48 to 51 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 to 66 percent on "consistent and complete transmission of patient information when patients are referred to other providers."
- From 7 to 30 to 34 percent on "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 8.5 and 8.3, respectively, in the overall domain of coordination of care across the medical neighborhood on the 2015 practice survey (see Appendix A, Table A.2a). However, a higher proportion of CPC than comparison practices (77 versus 58 percent) reported that they conducted routine follow-up with patients seen in EDs or hospitals because of established arrangements with them to track patients and ensure timely follow-up (see Appendix A, Table A.4a).

CPC practices, however, had large unfavorable differences relative to comparison practices on some measures within the care-coordination domain. We cannot determine whether these differences were caused by CPC or by some other unmeasured factor. For example, practices might self-rate themselves more harshly as redesign efforts proceed, and they truly understand the work required to change care processes and capabilities.

CPC practices, on average, were *less likely* than comparison practices to:

- Have formal relationships with *most* other practices and providers of medical care (24 percent of CPC versus 40 percent of comparison practices)
- Obtain timely receipt of information on *all* patients after they visit specialists in the community (14 versus 23 percent)

Considerable room for improvement also remains in the area of care compacts with specialists. CPC practices' use of care compacts remains low at 19 percent overall according to Milestone data. More strikingly, practice survey data indicate that the use of care compacts[57] continues to be much lower in CPC than in comparison practices (24 percent versus 40 percent) in 2015. This difference does not appear to be driven by differences in electronic data exchange with other specialist providers, because similar percentages of CPC and comparison practices (about one-third of each) reported this capability in the practice survey. Like practices nationwide, CPC practices have substantial opportunities to improve how they coordinate and exchange information with specialists.

b.2. Care coordination in deep-dive practices

Nearly all 21 deep-dive practices selected the option of contacting patients within 72 hours after hospital discharge, and most of these reported successfully making these contacts. A practice's care manager typically called patients after a hospital discharge. In about one-third of practices, however, other practice staff (such as care coordinators, medical assistants, or the practice manager) followed up with patients to check up on them and schedule appointments. In addition, most deep-dive practices selected the option of ED follow-up, and they followed up with all patients discharged from the ED, regardless of risk score, diagnosis, or condition. A few of these practices, however, prioritized patients and contacted only a subset, including patients

[57] The practice survey wording on care compacts/coordination agreements is more general than the wording in the Milestone reporting requirements. This factor accounts for the difference in percentage of CPC practices reporting care compacts in 2015. In the practice survey, the highest score for the item (the top-box score, which we report above) on care compacts states: "Referral relationships with medical and surgical specialists are formalized with referral protocols or practice agreements with most or all medical and surgical specialist groups." In contrast, in the Milestone reports, practices must report that they have enacted a care compact/collaborative agreement with at least two groups of high-volume specialists in different specialties to improve coordination and transitions of care.

who frequently visit the ED and high-risk patients. A much smaller proportion of deep-dive practices are pursuing collaborative agreements with specialists; of these, a few have established agreements, but most are still in the planning stages.

Care transitions after ED visits and hospitalizations

Deep-dive practices with electronic access to local or system-affiliated hospital records noted this access made it much easier to identify patient discharges promptly. Having electronic access to hospital records or to a hospital portal gave practices the ability to identify when a patient was discharged from the ED or hospital and review the patient's hospital records, including the inpatient medication list. About one-third of deep-dive practices (some system-owned and some independent) were also able to work with the hospital to which they most often admitted patients, to receive an automated daily census list of discharges from those hospitals and EDs. However, many practices noted continued challenges in identifying their discharged patients when patients sought care from hospitals with which practices did not have electronic information sharing or a systematic notification process.

Practice staff felt that patient-education efforts and the availability of care managers helped reduce inappropriate ED use. Several practices felt that access to a care manager helped patients avoid the ED for nonurgent needs. The care manager encouraged the patient to come in to see the primary care clinician (if needed), helped reduce the patient's anxiety about an issue by telephone (if appropriate), or quickly obtained input from a clinician. A few deep-dive practices keep lists of frequent ED users, so care managers can educate them about appropriate use of the ED and when to call the practice first before going to the ED.

> "[Patients] know I can get a message to [their doctor] rather quickly, so they'll call me with their questions and concerns, and I'll get it to him."
>
> *—Care manager*

Across deep-dive practices, clinicians and practice staff identified several ways in which care-transition activities were improving patient care; results included increased patient satisfaction, better quality of care through medication reconciliation and early identification of problems, and reduced readmissions. First, practice members in several practices noted that patients expressed appreciation that practice staff took time to check on them after a transition of care, indicating possible improvements in patient satisfaction. Second, practice members felt that medication reconciliation helped ensure that patients understand their medications (for example, when a dosage had been changed while in the hospital or one medication had been substituted for another). Third, practice members noted that care transition calls helped them identify and promptly address problems by ensuring that patients with potential issues were scheduled to see their primary care clinician after discharge. A few practice staff believed these care transition calls (and, in some cases, office visits) prevented patients from readmissions.

> "I have gotten personal feedback from the patients alone saying, 'Hey, you know what? Thanks for that callback. Thanks for checking up on me to see if I needed that follow-up appointment. I really appreciate the fact that you're calling to make sure that everything's OK.'"
>
> *—Practice manager*

Care coordination with specialists

A few deep-dive practices had established formal collaborative agreements with specialists; in general, however, practices reported they were still establishing these agreements. Practices still establishing collaborative agreements want to do so with specialists to whom they most often referred patients (for example, cardiologists and gastroenterologists). A few practices mentioned specific challenges to setting up collaborative agreements (such as reaching agreement on how information should flow between practices). A couple of practices noted that specialists are having difficulty managing multiple collaborative agreements with multiple referring groups, because these agreements vary in their communication and coordination requirements. Practices that were part of systems in which all clinicians were on the same EHR felt less need for care compacts, because they could see other providers' notes on their patients.

The main challenge in coordinating patient care with specialists continues to be the manual (nonautomated) processes through which primary care providers exchange patient information with specialists. Outside of hospital- or system-owned practices in which all providers are using the same EHR, practices continue to spend substantial staff time having care coordinators and referral coordinators make multiple calls to manage and track referrals and to obtain the faxed consult reports. A few deep-dive practices (both independent and hospital owned) are using their EHRs to track referrals and exchange referral and consultation notes with specialists. However, data exchange across providers in different systems/practices will require broader improvements in interoperability, which is outside of the control of many primary care practices.

5.4.6. Milestone 7: Shared decision making

In 2015, Milestone 7 required practices to use at least three patient decision aids (PDAs) to support shared decision making in preference-sensitive care. Practices were also required to track use of the decision aids using one of the following methods: a metric tracking the proportion of patients eligible for the decision aid who receive the aid, or quarterly counts of patients receiving individual aids.

a. Overview of findings

For Milestone 7, CPC practices were making slow progress in implementing shared decision making. There continues to be room for improvement in this area in (1) providers and staff understanding the concept of preference-sensitive conditions, (2) development of care processes to provide SDM without overwhelming clinicians, and (3) refining the ability to track SDM in EHRs. Deep-dive practices that used teamwork to engage patients in SDM found Milestone 7 more manageable, but this approach also posed risks of potentially inappropriate distribution of decision aids if the workflows were not carefully thought out.

b. Detailed findings

b.1. Shared decision making for all CPC practices

The top four 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, and (4) medication choices in management of diabetes (Table 5.16).

Table 5.16. Most common shared decision making topics chosen by CPC practices as of quarter 1, 2015

Shared decision making topic	Percentage of practices
Colon cancer screening strategies	59.4%
Other[a]	50.2%
Prostate cancer screening	40.8%
Tobacco cessation	24.5%
Medication choices in management of diabetes	20.1%
Screening mammography age 40–49	19.2%
Diagnostic and therapeutic management of acute low back pain without high risk indicators	18.2%
Therapeutic options in management of mild depression	15.9%
Care preferences over the life continuum	15.1%
Osteoporosis	11.5%
Statin/aspirin	10.3%
Therapeutic options in management of adult sinusitis	10.0%

Source: Mathematica analysis of PY2015 Q1 Milestone submission results provided by CMMI.

Notes: 478 practices reported on their choice of SDM topics. Practices each chose between two and six SDM topics.

[a] Other includes management of acute low back pain, chronic back pain, insomnia, chronic pain, menopausal symptoms, adult sinusitis, mild anxiety, mild depression, urinary incontinence, osteoarthritis of the hip/knee, claudication, asthma, congestive heart failure, COPD, diabetes, anticoagulation in atrial fibrillation, screening mammography, and care preferences across the life continuum.

Milestone data illustrate that the organizations from which CPC practices most commonly obtained PDAs for SDM include Mayo Clinic, Healthwise, Centers for Disease Control and Prevention, the Agency for Healthcare Research and Quality, and the Informed Medical Decision Making Foundation (Table 5.17).

Table 5.17. Source of decision aid, CPC-wide and by region

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Other	81%	74%	70%	79%	67%	96%	92%	89%
Mayo Clinic	33%	14%	20%	40%	29%	29%	59%	42%
Healthwise Decision Points	25%	34%	38%	32%	34%	12%	5%	20%
Centers for Disease Control	24%	34%	35%	21%	37%	4%	15%	23%
Agency for Healthcare Research and Quality	14%	14%	14%	8%	22%	16%	5%	20%
Health Dialog/Informed Medical Decisions Foundation	3%	3%	6%	3%	0%	0%	0%	11%
Food and Drug Administration	2%	7%	4%	2%	1%	0%	0%	0%
Emmi Solutions	1%	0%	0%	10%	0%	0%	0%	0%
Number of practices	**466**	**58**	**71**	**62**	**73**	**75**	**61**	**66**

Source: Mathematica analysis of PY2015 Q4 Milestone submission results provided by CMMI.

Note: Percentages for all regions are based on 466 practices that submitted Milestone data for the last quarter of 2015. Practices could indicate multiple sources of decision aid.

Information from the practice survey sheds some light on CPC practices' work on SDM. 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 to 35 percent from 2012 to 2014 to 2015, respectively (see Appendix A, Table A.4a). The percentage of CPC practices that reported 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" increased from 41 percent in 2014 to 55 percent in 2015. (We did not ask practices about this area in 2012.) (See Appendix A, Table A.4a.) These results indicate some improvement, as well as room for increased practice use of SDM.

b.2. SDM in deep-dive practices

Most deep-dive practices continued with the same two SDM topics they had chosen in prior years; for 2015, they chose the third topic based on its relevance to their patient population. A few practices, however, felt that the addition of a third SDM topic in 2015 was overly burdensome.

> "We finally got them [clinicians and staff] on board with the antibiotic avoidance and then it was time we added the other one on….I keep saying to the team, it's probably a four- to six-month period of constantly drilling and drilling and drilling it in before [they say] 'Oh,' like the light goes on kind of thing."
>
> *—CPC lead from a health system*

The extent of clinician involvement in choosing the third SDM topic for 2015 varied by practices' ownership arrangements. In both small and large independent deep-dive practices, clinicians themselves selected their practices' third SDM topic via group discussions. In some system-owned practices, staff at the corporate level (for example, the system-wide CPC director) selected the SDM topic. A few system-owned practices had practice-level clinicians help select the topic, or worked with the corporate office to do so, to ensure practice site support and relevance. Generally, systems liked to roll out the same SDM topics across their CPC practices. A couple of systems seemed to more heavily involve frontline clinicians in SDM topic choice in 2015 compared with prior years. As a CPC project manager in one of those practices noted, "Providers are kind of leading that effort…because if they don't, they're not going to use it. They need to make the decision."

After identifying their third SDM topic, a few practices continued to struggle to identify PDAs appropriate for their patient populations. As in the first two years of CPC, a few practices noted initial challenges in finding a third PDA for PY2015 that was appropriate for their patient populations (that is, short, simple to understand, and culturally appropriate) or that was affordable. A few practices customized "off-the-shelf" PDAs to ensure a 5th-grade reading level and images reflecting their population's racial/ethnic background. Other practices created their own PDAs.

Deep-dive practices used decision aids to support SDM more in PY2015 than in the first two years of CPC, and many found them helpful. Clinicians appreciated that PDAs provided "more support" when discussing difficult decisions, such as treatment for low back pain or testing for PSA. Several clinicians noted that using PDAs led to more informed patients. In at least one case, a clinician felt use of the practice's low back pain PDA had reduced unnecessary diagnostic testing. Clinicians in a couple of other deep-dive practices, however, noted that some older patients were less open to using PDAs and simply asked the doctor what they should do.

Paper PDAs were more commonly used than online PDAs. Several practices used paper PDAs and cited their ease of access and higher use compared with online tools. At least one practice provided online decision tools but found patients were not viewing the PDAs. The practice manager noted, "I think when they get out of the doctor's office, they don't want to be bothered." A couple of practices were thinking of moving to new modes for PDAs, including videos, or iPads that patients can use in the waiting room.

Deep-dive practices described making ongoing refinements to workflows, including who on the practice team could most effectively initiate the SDM discussion with patients. A leading challenge practices identified was who should initiate discussions about sensitive SDM topics with patients. A few practices learned from prior years that more sensitive topics (for example, advance directives) were more effectively discussed with patients by the physician, and less sensitive topics could be initiated by the medical assistant or nurse. Most practices raised SDM topics during both routine and acute visits when appropriate. A couple of practices raised sensitive topics during the annual wellness visit. A few also used population-based outreach between visits, such as mass mailings to patients age 50 and older who had not had colorectal cancer screening. The mailing included the PDA and a letter with information on how to contact the clinic to set up an appointment. Some practices that had tried this approach, however, felt that too few patients called to make appointments to discuss screening.

About half of deep-dive practices are taking an organized team approach to SDM, which has made it easier to implement. Before a patient visit, these practices typically identified the SDM topic relevant for each patient. Practice staff then gave the PDA to the patient to review in the waiting room and noted the patient's PDA use in the EHR. Next, depending on the topic, a nurse or physician would initiate the SDM discussion during the visit, and that person or another staff member would document the conversation and the patient's decision in the record. In practices with less of a team approach, clinicians responsible for handling SDM by themselves tended to feel the work was onerous.

Even with a team approach, however, clinicians in a couple of deep-dive practices felt that meeting CMMI measurement requirements for SDM increased inefficiency in other care processes and shifted staff time away from other activities. A lead physician noted that he had to shift to introducing SDM at visits for routine and acute care, as opposed to just at an annual wellness visit: "To meet the criteria, we were not able to use it only at well visits, because we weren't going to get enough numbers to meet the criteria. So, we had to start doing it at routine office visits. So someone was coming in …for a high blood pressure check, and they were handed a PSA sheet. Now suddenly, I have a 15-minute discussion about PSA, and it's off schedule with the prostate exam. It was very burdensome. It caused a huge backlog in the office, and it certainly slowed us down. The quality of life and morale went down amongst the docs..."

Documenting SDM discussions and patient decisions for CPC reporting continues to be time-consuming for clinicians and staff. In many practices, clinicians reported they do not have the time or they simply forget to check the structured SDM fields in the EHR, but they will document this information in the free-text portion of the EHR note. In a couple of practices, the practice manager developed a workaround for a staff member to remind providers to use the structured data fields and review the note to ensure that information was captured in the appropriate structured data fields. In a few deep-dive practices, clinicians continue to document on paper when SDM discussions with a patient have occurred, after which staff enter the information into the EHR. A few practices felt their EHRs, after heavy modification by their IT departments, supported this documentation well. In a few practices, providers were still looking to EHR vendors to create data fields that are more user friendly to support SDM and track its use.

> "You can't just talk to somebody about quitting smoking; you've got to show it [in the EHR in] four different spots, so that the government can see it anytime that they want...Every time we come up with something new, it takes my nurse another five minutes. People [who are] not working [in the clinical setting] don't think that five more clicks is a big deal, but when you're seeing patients every day and every patient has five more clicks, it's a big deal…That's where the biggest issue is…and we're paperless."
>
> *—Lead physician*

A few practices seem to devote less attention to SDM than to other Milestones, where providers see a clearer link between their resource investment and improved outcomes (such as reduced ED visits). A practice manager captured the sentiment of a few others when she described their implementation of SDM as "the weakest Milestone." A practice group administrator from another practice noted, "I looked at the whole program of what we're doing with CPC…I see ED [overuse] on one end going, 'Oh my God, we've got resources and now we have an information system. We can make tremendous changes there!' And then I look at the other end, going, 'You know, how much effort do I put into shared decision making?' Because it just doesn't seem to have sticking capability to work." SDM for advance directives was a notable exception because clinicians saw a link between it and patient outcomes and costs, and a few felt it should be more heavily emphasized in CPC. A couple of practices credited CPC with helping them establish a more systematic process for addressing advance directives with patients.

Clinicians and staff in half of the deep-dive practices still do not seem to understand the term "preference-sensitive conditions," despite the additional guidance from CMMI on shared decision making.[58] As in prior years, practices continue to not understand that SDM refers to preference-sensitive conditions, believing instead that SDM refers to general patient education for services for which there is a strong evidence base. This confusion contributes to lower levels of support among staff.

The Milestone requirement to document use of patient decision aids may have the unintended consequence of inappropriately increasing certain testing, if the practice has not carefully thought out the workflow. To achieve high counts on decision aid distribution on their CPC reporting, care managers and medical assistants in several practices are treating preference-sensitive topics (such as PSA screening) like an evidence-based recommended service and trying to expose all men over a given age to the PSA decision aid. Some use the

[58] Such as "Shared Decision Making: An In-Depth Review of the Critical Elements for Success." CMMI: August 2014.

same workflows for PSA testing that they would use for screening mammograms in women over age 50 or for colorectal cancer screening. Unlike screening options for colorectal cancer, all of which are supported by strong evidence, none of the neutral scientific guidelines recommends routinely screening all men for prostate cancer using the PSA test because of the high rate of false-positive results. Therefore, distributing a PSA decision aid likely requires a different workflow than, for example, distributing a colorectal cancer screening decision aid. For PSA testing, for example, one might wait until a patient raises the issue with the clinician, or rely on the clinician to decide when and whether it is appropriate to hand the patient the decision aid based on his symptoms or concerns. The large number of CPC practices that have chosen PSA testing as one of their SDM topics (it is the second most frequent SDM topic after colorectal cancer screening), combined with some practices' blanket approach to distributing PSA tools through the front desk or a care manager, may contribute to potentially higher rates of PSA testing than if the clinician waited until a patient asked about PSA testing to use the PSA PDA or used it in response to patient symptoms or concerns.

5.4.7. Milestone 8: Participation in the CPC learning collaborative

To fulfill the requirements for Milestone 8, practices participated in full-day in-person regional learning sessions, attended webinars, and participated in at least one action group or affinity group, smaller groups designed to foster increased peer-to-peer sharing and rapid testing of small changes to practice care delivery. They also contributed to the CPC collaboration website, and engaged with the regional learning faculty (RLF) to support the practices' transformation efforts. In assessments by RLF, most practices met Milestone 8 requirements for participating in CPC learning activities. Chapter 3 describes the regional and national learning activities offered in PY2015 and CPC practice perspectives on learning.

Deep-dive practices affiliated with health systems had access to additional training opportunities organized by the health system or larger practice organization, beyond those offered by the regional learning faculty. This training included motivational interviewing, coordinating with community resources, and use of health IT to support care delivery and improvement.

5.4.8. Milestone 9: Health IT

To meet the requirements of Milestone 9, practices were expected to ensure that all eligible professionals work toward meeting the requirements of Stage 2 Meaningful Use to optimize the use of their EHR to support better care and improved health outcomes. For PY2015, CMMI suggested many changes that practices could use to accomplish this objective.[59] These changes included (1) modifying workflows for more effective EHR use, (2) training staff in optimal EHR use, (3) using referral templates and other standardized documents to support health information exchange, (4) building analytic capacity to use EHRs to identify improvement opportunities, and (5) improving entry of clinical data to ensure accurate quality monitoring and reporting. Many of the findings about health IT as a tool to support specific Milestones are included in earlier Milestone sections. This section focuses on cross-cutting issues with health IT across Milestone activities.

[59] "CPC Program Year 2015 Implementation and Milestone Reporting Summary Guide." May 2015.

a. Overview of findings

As required by CPC, practices are using ONC-certified EHRs, and 99 percent of CPC practices attested that their eligible providers are currently working toward meeting the Stage 2 requirements for Meaningful Use. However, triangulation of data from Milestone reporting, practice survey, and the deep-dive practices reinforces challenges that practices face obtaining and exchanging timely data from providers outside their practice or system. This factor poses barriers to improving follow-up care after ED visits and hospitalizations and to coordinating care for patients after their visits to specialists (see Milestone 6 above).

For CPC eCQM reporting, the practices had to work with EHR vendors or their larger health care systems (if they were part of systems) to create results at the practice site level. Deep-dive practices reported that current EHRs have inadequate and limited functions to support eCQM reporting, which practices see as a challenge to meeting the 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.1. Use of health IT in all CPC practices

According to Milestone 9 data from the last quarter of PY2015, 99 percent of CPC practices attested that all eligible providers are currently working toward meeting the Stage 2 requirements for Meaningful Use (Table 5.18).

Table 5.18. Percentage of CPC practices whose eligible providers are working toward Stage 2 requirements for Meaningful Use, CPC-wide and by region

Health IT	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Practice site attests that all eligible providers are currently working toward meeting the Stage 2 requirements for Meaningful Use	99%	100%	100%	100%	100%	99%	95%	100%
Practice site attests that not all eligible providers are working toward meeting the Stage 2 requirements for Meaningful Use	1%	0%	0%	0%	0%	1%	5%	0%
Number of practices	**466**	**58**	**71**	**62**	**73**	**75**	**61**	**66**

Source: Mathematica analysis of PY2015, Q4 Milestone submission results.

Note: Percentages for all regions are based on all 466 practices that submitted Milestone data for the last quarter of 2015.

Most CPC and comparison practices in the 2015 practice survey reported having an "electronic health record system for managing patient care" (100 percent of CPC practices and 96 percent of comparison practices). They also reported high use of the EHR's e-prescribing function: of the 100 percent of CPC practices that reported having an EHR system for managing patient care, 98.9 percent reported using this function. Of the 95.8 percent of comparison practices that reported having an EHR system for managing patient care, 98.3 percent of

practices reported using e-prescribing. Nearly all CPC practices (96.3 percent) and 87.1 percent of comparison practices reported using EHR-generated data extracts or reports to guide quality improvement efforts (see Appendix A, Table A.5).

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 2015 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, 55 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 40 percent could do so with local hospitals not in their system. Similarly, 73 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; 57 percent reported that they could do so with facilities outside their system. In 2015, CPC and comparison practices reported similar ability to report these data either inside or outside of their system (58 versus 55 percent respectively).

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 62 percent of CPC practices and 52 percent of comparison practices) and least advanced with other medical practices (reported by 29 percent of CPC practices and 37 percent of comparison practices) (see Appendix A, Table A.5).

b.2. Use of health IT in deep-dive practices

Many of the findings about health IT, when discussed as a tool to support specific Milestones, are included in earlier Milestone sections. This section focuses on cross-cutting issues across Milestone activities.

Modifications of EHR workflows and features to support CPC activities

Staff in several deep-dive practices reported that, as part of their ongoing work to meet Meaningful Use guidelines, they had updated their EHRs with new tools or functions to support care management activities. These updates included tools that supported documentation of care management activities in the EHR and systems for sharing information within the practice about care plans and care management needs for high-risk patients. A few other practices continued to report that these features were not integrated into their EHR systems. In these cases, practice staff reported developing dual documentation systems or workarounds in the EHR (for example, using a nonbillable encounter template to document care management work).

> "When we first bought [the EHR, it] didn't have those data pulling tools. There wasn't a need for that. We just needed…an electronic medical records system. So…we kind of put things where we thought it made sense….Now we realize we need to put things where the data is being extracted…to do the reporting, so we've had to go out and retrain providers."
>
> *—Project manager*

Standardizing and ensuring consistent data entry into structured fields in the EHR remain ongoing challenges across deep-dive practices, particularly for reporting clinical quality measures to guide quality improvement. Practice members reported that this standardization process required ongoing training of clinical staff and the development

of data validation work processes to ensure accurate capture of data for quality-of-care reporting and monitoring.

Health information exchange

Electronic information exchange across settings remains challenging in many deep-dive practices. Consistent with the practice survey results, staff in several of the deep-dive practices reported that their electronic exchange of patient information was limited to affiliated hospitals or specialists (in system-owned practices), was missing key information from certain specialists or hospitals (in independent practices), or relied on haphazard information sharing by other providers. This limited and incomplete information exchange made it difficult to track and manage the care of high-risk patients by increasing follow-up time and the possibility that important problems were being missed. In several practices that have this capability for exchanging information among both affiliated and independent providers, practice members typically reported that access to hospital records and electronic notifications of their patients' ED visits was more common than electronic exchange of information with specialists. The few deep-dive practices in which staff reported an ability to easily exchange information with a variety of specialists were in local areas that reportedly had robust local health information exchange organizations. Several other practices continued to rely on manual workarounds to track hospitalizations, ED visits, and specialist referrals.

> "[We are] just relying on the hospital's reporting that they're sending us those discharge reports, that our patient was discharged, and so sometimes I get those within 24 hours, and sometimes I don't get them until a week later."
>
> *—Nurse care manager*

Building analytic capacity to support improvement

While practices continued to face challenges standardizing data entry, many deep-dive practices reported that they had the resources and capacity to analyze EHR data and support reporting requirements. For example, practice members reported that either they, or their larger system, had EHR capabilities for identifying and tracking preventive health needs and gaps in chronic illness care for quality improvement and visit planning. In several of these practices, these analytic and reporting resources were available either at the local practice site or across the system the practice was affiliated with; in some cases, investment in developing this capacity had eliminated the need for outside support contracts.

5.5. Monitoring of adequate Milestone achievement

In PY2015, CMS and RLF assessed CPC practices' progress based on quarterly Milestone submissions through the CPC web application. CMS assigns a CAP to those practices not meeting Milestone reporting requirements. As in PY2014, CMS and RLF initially used a Milestone review guide to manually assess each practice's Milestone performance. The guidelines include metrics that describe the continued progress practices should be making on each Milestone and list targets and thresholds that practices need to meet to demonstrate progress. In PY2015, however, CMS began to partially automate the process. Specifically, CMS extracted Milestone data from the CPC web application. From this data, a "flag report" was generated that used color coding to identify practices with Milestone deficiencies. Practices that received red flags were referred to CMS region leads for further review. The region leads used a

Milestone review guide (developed by CMMI) to further assess practices and determine whether they should receive a CAP. If a CMS region lead recommended that a practice receive a CAP, a clinical reviewer from CMS who is involved with the CPC initiative conducted a second-level review using the guide and his/her clinical practice knowledge. This review served to ensure the fairness of the review process.

During the Milestone review process, CMS assigned red flags based on practices' performance on Milestone targets and thresholds. For example, practices received red flags if they failed to meet quantitative targets (for example, for Milestone 2: Meeting the 95 percent patient empanelment target) or failed to conduct Milestone activities (for example, for Milestone 3: Creating a measure of continuity of care). Beginning with its PY2015 Q4 review, CMS developed a pragmatic approach to the quantitative targets CMS specified in the review guide. For example, for Milestone 2 (which had a 95 percent patient empanelment target), practices were not flagged for a review if their patient empanelment percentage fell between 92.5 and 95 percent for one quarter, and the practice's deficiency was occurring for the first time. Practices whose performance fell below that range received a red flag. Practices that received red flags were referred for CAP review. If practices received a CAP, they were urged to contact their RLF for assistance, and RLF then provided individual coaching to these practices. In monthly team meetings with CMS and the RLF, there was discussion of the practices' efforts to meet the Milestone requirements and remove the CAP. CMS offered its advice to the RLF during these monthly meetings. In PY2015, CMS classified practices with red flags that did not receive CAPs as high risk, thereby identifying them for additional follow-up from RLF. (Prior to PY2015, RLF reviewed Milestone data to identify high-risk practices; however, in PY2015, CMS transitioned to a partially automated process that incorporated the flag report to ensure greater consistency in practice Milestone assessment across the CPC regions.) In the last two quarters of PY2015, CMS also changed its standard for identifying high-risk practices, reducing the threshold from those with two or more red flags to those with at least one red flag. This change increased the number of practices labeled as high risk.

5.5.1. Practices that received CAPs for PY2015 Q1–Q4 performance

Seventy-three unique CPC practices received CAPs based on their PY2015 performance, with three practices from Arkansas, New Jersey, and Oregon placed on a CAP twice during 2015 (Table 5.19). Eleven of these 73 practices had previously received a CAP for their Milestone performance in PY2014 or PY2013. Of the 76 total CAPs sent to practices in PY2015, approximately 85 percent of CAPs listed deficiencies with one Milestone area, while 12 percent listed deficiencies with two Milestone areas, and 3 percent listed deficiencies with three Milestone areas. No practice received a CAP for deficiencies in more than three Milestone areas in PY2015. Of the Milestone areas for which practices could receive CAPs, approximately 54 percent of practices were notified of deficiencies for Milestone 2: Care management for high-risk patients, and just over half were notified of deficiencies in Milestone 6: Care coordination across the medical neighborhood. For the other Milestones, only a few practices were notified of deficiencies. Five practices were notified of deficiencies for Milestone 7 (one of which withdrew from CPC), and four practices were notified of deficiencies for Milestone 5. Milestone 3 had three practices notified for deficiencies, and Milestones 1 and 4 each had one practice notified of deficiencies, although the one practice with a Milestone 4 deficiency withdrew from CPC. Finally, no practices were notified of deficiencies under Milestone 8.

The amount of time that CMS gave practices to remediate their CAPs was shorter in PY2015 than in previous years. In PY2015, practices that received a CAP were given two full quarters to remediate. As of June 2016, among the 76 practices placed on a CAP for PY2015 work, 62 had been remediated and remained in the initiative, and another 2 had been remediated but then voluntarily withdrew. Nine practices remained on CAPs. Two other practices that had received CAPs for PY2015 work voluntarily withdrew from CPC (prior to being remediated) at the end of the third and fourth quarters of PY2015, respectively, while another practice merged at the end of second quarter of PY2015. As of April 2016, three additional practices remained on extended CAPs for PY2014 work (not reflected in Table 5.19).

Table 5.19. Number of practices placed on a CAP for PY2015 performance

	Total number of practices placed on a CAP for PY2015, based on prior quarter's Milestone performance							
	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Placed on a CAP based on performance in these quarters of PY2015[a]								
Quarter 1 (Jan–March)	27	8	7	3	8	1	0	0
Quarter 2 (April–June)	10	0	1	1	3	0	1	4
Quarter 3 (July–Sept.)	28	4	8	2	2	1	5	6
Quarter 4 (Oct–Dec.)[b]	11	3	1	1	0	1	3	2
Total for PY2015	76[c]	15	17	7	13	3	9	12
Among practices placed on a CAP for PY2015, their status as of June 2016:								
Number that were remediated	62	13	16	6	10	3	6	8
Number that remained on corrective action for PY2015 performance	9	2	1	0	1	0	2	3
Number that withdrew from CPC[d]	4	0	0	1	1	0	1	1
Number that merged with another practice	1	0	0	0	1	0	0	0

Source: CAP data provided by TMF.

[a] For practices who received a CAP for PY2015 Q1 or Q2 work, these practices were expected to remediate by PY2015 Q4. Those who received a CAP for PY2015 Q3 or PY2015 Q4 work were expected to remediate by PY2016 Q1 and PY2016 Q3, respectively.

[b] Notifications were issued in PY2016

[c] Includes three practices from Arkansas, New Jersey, and Oregon that each received two separate CAPs during PY2015.

[d] Note that two of the four practices that voluntarily withdrew from CPC had been remediated before their withdrawal.

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. These barriers and facilitators, similar to those observed in PY2014, include:

1. Health IT
2. Practice ownership/affiliation
3. Teamwork
4. Leadership
5. General transformation overload
6. Continued need to work within a fee-for-service payment system

Health IT, when working well, seemed to support the use of 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 health IT 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 identify which specialists the patient had seen and to access that patient's consultation notes.

Practices reported that current EHRs have inadequate and limited functions 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 ownership/affiliation 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 health IT support and staffing for on-site care managers. A shared EHR across system-owned practices and affiliated specialists 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. Practices that used team-based approaches to workflows, including clear role delegation and open communication, found the Milestones, particularly Milestones 2, 5, 6 and 7, more manageable than practices that were less team-oriented. 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 continues to be challenging to get all clinicians and staff in a CPC practice to support the workflow and EHR documentation changes needed to implement the Milestones, although deep-dive data suggest that this challenge improved somewhat in 2015 as practices spent more time reinforcing the importance of this support with their clinicians. In larger practices, those in which only a lead clinician or a few clinicians and staff members were implementing CPC reported more difficulty implementing the Milestones.

Leadership. Dedicated practice champions were important for supporting CPC implementation and practice transformation. Deep-dive practice members noted the essential role of the champion in obtaining clinician and staff support for CPC-related change, building staff dedication to practice implementation efforts, and communicating the vision and goals of CPC to the practice clinicians and staff. In practices where the designated CPC "champion" did not take on this leadership role, clinicians and staff failed to understand the goals of CPC. This lack of a clear vision for change was an obstacle to prioritizing the implementation of practice workflows necessary to support Milestone work. In some practices, the champion was a CPC project manager; in others, it was a lead physician.

General transformation overload. As with past years, 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 PY2015 noted they were doing so to join accountable care organizations (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 having the most clinical meaning and potential to improve patient outcomes.

It is challenging to provide comprehensive primary care within a fee-for-service payment system. While practices receive upfront care management payments for CPC patients, and in one region shared savings, they still face challenges associated with the predominant fee-for-service payment system. These challenges include volume-based productivity incentives (the more patients primary care clinicians see per day, the more they are paid), and the inability of primary care practices to influence the behavior of specialists, other providers, and hospitals. The former issue affects primary care practices' work on several Milestones. For example, because clinicians are paid more if they see more patients, they and the systems that employ them have incentives to keep visits brief. Thus, they have less time to devote to particular Milestone

activities, such as discussing patient decision aids on sensitive topics, working closely with a care manager to discuss a patients' management, or delivering more comprehensive care. Fee-for-service volume-based incentives, combined with the ability of Medicare fee-for-service patients to self-refer to specialists, further hinder the ability of practices to provide comprehensive care across all of a patients' conditions and needs. While primary care practices would ideally limit referrals to specialists for patient problems that are particularly unique or complex, under the current fee-for-services, it is more lucrative for practices and their hospital systems to refer patients to a different specialist for each body system, rather than managing them mostly in the primary care practice. In addition, Medicare fee-for-service beneficiaries can self-refer to specialists who can then refer them to other testing and providers. It can be difficult for primary care practices to control such utilization and spending.

In Table 5.20, we summarize the facilitators and barriers (similar to our findings for PY2014) that emerged from the summer 2015 interviews during site visits to the 21 deep-dive 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 5.20. Facilitators of and barriers to implementation of CPC Milestones for PY2015, as reported by deep-dive practices

	CPC Milestone for PY2015							
	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	Health IT
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		

Table 5.20. *(continued)*

	CPC Milestone for PY2015							
	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	Health IT
System-affiliated practices had support for health IT and QI	**O**			**O**				
Barriers								
Independent practices lacked resources and support for health IT 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**	
Participation 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 (for example, 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 to which they apply. Some issues (for example, patient receptivity to change or willingness to engage in activities) can be both facilitators and barriers and may therefore appear in both rows.

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

5.7. Implications for CPC implementation in the final year

In the final year of CPC, PY2016, CPC practices will continue their work on the nine Milestones. They are required to further build on the capabilities they have developed to (1) further refine care management processes (Milestone 2); (2) use a plan of care to support care management of patients with complex needs (Milestone 2); and (3) build the relationship between patient and care team that is at the heart of effective primary care (Milestone 3).[60] Findings from across data sources in PY2015 of CPC have implications for these three newly highlighted areas for PY2016 as well as for ongoing Milestone work:

- **Refinement of care management processes in PY2016 may be challenging but may also help better define care manager responsibilities across practices, and enhance collaboration among clinicians, care managers, and patients.**
  - In PY2015, as in prior years' deep-dive interviews, the care managers' responsibilities ranged from being narrowly defined in some practices (where they focus on just education and monitoring for patients with diabetes) to very broadly defined and hence "overwhelming" (including monitoring patients across several of their chronic conditions, conducting hospital and ED follow-up, trying to address patients' social needs, and helping patients navigate the health care system and social services resources.) Support for practices to ensure the care manager role is neither too limited nor overwhelming could help refine care manager responsibilities and processes to support them. Some of the variation in responsibilities across practices is a function of the amount of funding and staff the practice or its larger system are willing to dedicate to support care managers.
  - More consistent integration of care managers as part of the primary care team will require continued efforts to gain clinician support for their role, emphasize in-person introductions of patients to care managers by the clinicians, and, in some practices, require more resources be invested in care manager training, support, and staffing.

- **Practices, regional learning faculty, CMMI, and EHR vendors may need to do significantly more work to develop and use clinically meaningful care plans that care managers, clinicians, and patients find useful.** In PY2016, practices are being asked to focus more on developing and using care plans for the management of patients with complex needs. CPC guidance to practices in PY2015 noted that an essential feature of care management is "a mutually agreed upon and documented plan of care, based on the patient's goals and the best available medical evidence; it is accessible to all team members…and addresses all major and significant ongoing health problems and risks." In both our deep-dive interviews as well as in the in-depth interviews with high-risk patients undergoing care management, care plans were not routinely given to high-risk patients, and the concept was often not recognized by patients or clinicians. Practices, clinicians, and patients did not describe using a care plan shared by the patient/caregiver, care manager, and clinician to set goals and monitor progress over time. In many cases, nurse care managers created care plans for patients, but the care plan was not used by the clinician or given to the patient. Thus,

[60] "CPC Program Year 2016 Implementation and Milestone Reporting Summary Guide." December 2015.

practices will need significant support to do the work necessary to develop and deploy care plans as CPC intends in PY2016. Although some deep-dive practices' EHRs had a care plan tool or software add-ons that care managers could use, several practices lacked this capability. Such practices will be at a disadvantage in trying to create, document, and modify care plans in a way that is accessible and useful to the relevant members of the practice team.

- **To strengthen "the relationship between patient and care team that is at the heart of effective primary care," PY2015 findings suggest that practices will need to continue to emphasize interpersonal continuity between the patient and clinician/team.** Findings from PY2015 suggest three areas that would be particularly fruitful for improving this relationship:

  1. As the size of the primary care team grows, and as tasks for Milestone work are spread out across a range of individuals within the practice (and in some cases, its larger hospital system), there is a risk of diminished interpersonal continuity with patients. To maximize the benefit of teamwork while maintaining interpersonal continuity of care between the patient and the core primary care team members, the primary care team needs to limit the number of people reaching out to the patient. This approach comes with training on teamwork, where the roles and responsibilities of clinicians and staff are clearly defined both within the practice and (as appropriate) for the patient.

  2. CPC practices' care managers will need support and strategies to coordinate with care managers and other staff from commercial health plans and hospitals during outreach to patients at the time of hospital discharge. In PY2015, we learned in both deep-dive visits and in-depth patient interviews that outreach to patients by hospital- and health plan-employed care managers during care transitions in some regions posed barriers to patients' continuity of care with their primary care practice team and led to patient confusion on who was acting as their care manager. Primary care practices can reach out to hospitals and payers to coordinate transitional care. They can also reinforce with patients who their care manager is, and note that patients may receive outside contacts from other parties, but that those other parties should get in touch with their primary care practice's care manager.

  3. Practices' efforts to continue to obtain patient feedback could also help build the relationship between patient and care team that is at the heart of effective primary care. Data from patient surveys and PFACs could track this issue, and practices can modify how their team interacts with patients to maximize both patient engagement and continuity of care.

- **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 learn to delegate certain types of work (for example, care management activities from physicians to care managers) and foster more efficient and effective workflows. For teamwork to be effective, however, workflows, role definitions, and team members' responsibilities need to be carefully designed and understood across the team.

- **While PY2015 placed increased emphasis on CPC practices using data to modify workflows to improve quality, practices need to deepen this work in PY2016.** Numerous challenges to making data-driven QI part of the culture of CPC practices include data capture in EHRs, the demand on staff time for consistent documentation in the EHR, lack of time, an understanding of how to use payers' performance feedback, and practices' relatively ad hoc approaches to quality improvement processes.
- **To advance work on coordination of care, practices want improved support for data exchange with hospitals, EDs, specialists, and community-based providers caring for the same patients.** Given the workarounds many practices still have to pursue to collect timely notification and discharge information from hospitals, practices need increased cooperation with hospitals and EDs, particularly when those hospitals are not affiliated with the primary care practices. The poor interoperability and lack of a robust infrastructure for data exchange in the United States exacerbates this challenge.
- **Some 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.** These practices 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, including ways they might share care managers and part-time, on-site IT staff would likely benefit care management, coordination, and quality reporting.
- **Although system-owned practices usually had more resources than independent practices, 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 how their practices should implement changes, it is important for them to incorporate on-the-ground clinicians in those planning discussions and to clearly communicate to the clinical staff the rationale for these decisions.
- **Practice change is difficult to achieve, even when CPC 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 addressing multiple Milestones simultaneously, inadequate support for robust care management and health IT implementation in smaller independent practices, inadequate ability of current EHRs to support some of the Milestone activities, and many layers of management in larger system-owned practices. 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. Even with change in primary care practice delivery, the other providers (specialists and hospitals) treating the same patients often do not share the same incentives to coordinate care and face volume-based productivity incentives. Overcoming these challenges to modify workflows and system supports consistently across providers requires ongoing time, resources, and effort.

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

Patient-centeredness is a core tenet of the CPC initiative, and several aspects of CPC aim to improve patient experience through transformation of care delivery. Specifically, practices are expected to improve access to care, engage patients to guide quality improvement through regular patient surveys and/or a patient and family advisory council (PFAC), integrate culturally competent self-management support and shared decision making tools into usual care, and coordinate care across the medical neighborhood. Practices are encouraged, although not required, to use a personalized plan of care for high-risk patients. In addition, CPC uses patient experience as an element in determining eligibility for shared savings payments.

This chapter describes how the experiences of Medicare fee-for-service (FFS) beneficiaries attributed to CPC practices have changed during the first three years of CPC, highlights areas where practices still face the largest opportunities to improve, and examines how ratings of CPC practices have changed relative to ratings of comparison practices. We begin in Section 6.1 with an overview of the findings; then detail our data, sample, and methods in Section 6.2; and discuss detailed findings in Section 6.3.

6.1. Overview of findings

We analyzed patient-experience data reported by a sample of Medicare FFS beneficiaries attributed to CPC and comparison practices over the first three years of CPC. We used a patient survey based on the Clinician and Group Consumer Assessment of Healthcare Providers and Systems 12-Month Survey with Patient-Centered Medical Home supplemental items (CAHPS PCMH), which asks respondents to rate their experiences with care over the past 12 months. We collected the data in three rounds, from June through October in 2013, and from July through October in 2014 and 2015. The cross-sectional sample of respondents in each round includes more than 25,000 beneficiaries in roughly 500 CPC practices and 9,000 beneficiaries in roughly 800 comparison practices.

Overall, we found few statistically significant estimates of CPC's impacts on patient ratings of practices from 2013 to 2015. Impacts were mostly favorable, but small and scattered. There was some regional variation, with CPC practices in three regions showing small improvements relative to comparison practices in a few composite measures and one region showing a small relative decline in one composite measure. But, CPC-wide and in each of the regions, changes at CPC practices and comparison practices were small and mostly comparable. The results suggest that the CPC changes in care delivery during the first three years of the initiative did not negatively affect patient experience, as measured by the CAHPS PCMH survey, and that the few improvements for CPC practices were small relative to comparison practices. Like other practices, CPC practices continue to face opportunities to improve patient experience of care. To explore more fully the lack of meaningful effects observed, we detail our findings for the 6 composite measures, the 36 questions asked in all three survey rounds, and the 9 questions asked in only one or two rounds.

6.1.1. CPC-wide

The second annual report (Peikes et al. 2016) showed that between 2013 and 2014, CPC appeared to have small, statistically significant, favorable effects on three of six CAHPS composite measures relative to the ratings of beneficiaries attributed to comparison practices. Specifically, the percentage of Medicare FFS beneficiaries attributed to CPC practices who chose the highest ratings for the following measures increased more for the CPC group than for the comparison group: (1) timely appointments, care, and information (2.1 percentage points, $p = 0.046$); (2) providers support patients in taking care of their own health (3.8 percentage points, $p < 0.001$); and (3) providers discuss medication decisions with patients (3.2 percentage points, $p = 0.006$). These results were driven by small improvements (less than 2 percentage points) between 2013 and 2014 for CPC practices, alongside small declines (less than 2 percentage points) for comparison practices. Estimated effects on the other three composite measures suggested there were no discernable effects of CPC.

These small, favorable effects for CPC practices relative to comparison practices over time disappeared by 2015. From 2013 to 2015, among the CPC practices alone, statistically significant improvements were small in three composite measures (1 to 1.5 percentage points) and modest (5.5 percentage points) in one (providers support patients in taking care of their own health); there were no changes over time in the other two composite measures. These results were driven by small, but mostly not statistically significant improvements for the CPC practices from 2013 to 2014 in the six composites and minimal changes from 2014 to 2015. At the same time, patients at comparison practices also reported improved experiences with care in four of the six composite measures from 2013 to 2015 after small declines between 2013 and 2014. However, only one change over time was statistically significant. Putting together the improvements in beneficiary experience in both the CPC and comparison practices, between 2013 and 2015, there were no statistically significant effects of CPC at the conventional level of $p = 0.10$. Estimated difference-in-differences using mean responses present a similar picture to the effects using the proportion of patients reporting the best response. Using means, there were no statistically significant effects of CPC at the 0.10 level.

Turning to the individual questions, there were small favorable effects. We examined the 19 questions included in the six CAHPS composite measures and the 17 other questions that are not in the composite measures but were asked in all three survey rounds. Patients from CPC practices reported larger improvements—although generally of small magnitude—than patients in comparison practices for 5 of the 36 questions. This finding reflects slightly more favorable differences than the two questions one would expect by chance.

In addition, when looking at the nine survey questions that were asked in only one or two survey rounds (rather than in all three rounds), comparing the within-year CPC-comparison differences shows small favorable differences for CPC practices in 6 of the 15 comparisons, and a small unfavorable difference in one comparison. Five of the 6 favorable comparisons relate to patient follow-up after ED and hospital visits—both areas of focus for CPC.

These results suggest that the CPC changes in care delivery during the first three years of the initiative did not negatively affect patient experience, and that the few improvements for CPC

practices, relative to comparison practices, were small. Like practices in the comparison group, CPC practices continue to face opportunities to improve patient experience of care.

In 2015, both CPC and comparison practices still had substantial room for improving patient experience in three of the six CAHPS composites—timely appointments, care, and information; providers support patients in taking care of their own health; and providers discuss medication decisions with patients. Only 52 to 63 percent of patients gave the best ratings of care. There was less room for reporting improvement in the other three composites: 75 to 80 percent of patients in both CPC and comparison practices gave their practices the best rating for providers' communication; providers' knowledge of care the patient received from other providers; and patients' rating of the provider.

6.1.2. Region level

Between 2013 and 2015, there was some variation in the regional performance of CPC practices relative to comparison practices. There were some improvements in three regions. Arkansas showed the most improvement of CPC practices relative to comparison practices over time, with favorable effects of moderate size in three of the six composites (4.5 to 6.2 percentage points). New York and Oregon each had favorable effects in one of the six composites. CPC practices in Colorado experienced a relative decline compared with comparison practices in one composite measure (5.9 percentage points). There were no statistically significant differences between CPC and comparison practices in the other three regions: New Jersey, Ohio/Kentucky, and Oklahoma.

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 we selected using propensity score matching to have similar market-, practice-, and patient-level characteristics before CPC began. (See Appendix D for description of comparison group selection.) We examined the changes in patient ratings over time for both CPC and comparison practices and used difference-in-differences analysis to examine how ratings at CPC practices improved relative to comparison practices between the first survey round (8 to 12 months after CPC began) and the third survey round (33 to 36 months after CPC began).

For the 36 questions in all three survey rounds and the six composite measures, we conducted significance tests on the year-to-year changes for CPC and comparison practices in the proportion of Medicare FFS patients who gave the best (most favorable, or "top box") response. We also compared the change in the proportion of patients giving the best responses from 2013 to 2015 between CPC and comparison practices using difference-in-differences. For the nine questions that were asked in only one or two survey rounds, we conducted significance tests on the within-year differences between the predicted probabilities for CPC and comparison practices. We evaluated these differences overall and separately by region. To test the sensitivity of our findings, we conducted the same analyses using mean response.

Because multiple comparisons can lead to false positives, 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. Measurement of patient experience

Our patient survey instrument contains items from the CAHPS PCMH (Agency for Healthcare Research and Quality 2015). The survey gauges patients' experiences over the previous 12 months across six domains of primary care: (1) patients' ability to get timely appointments, care, and information; (2) providers' communication with patients; (3) providers' knowledge of care patients received from other providers; (4) providers support patients in caring for their own health; (5) providers discuss medication decisions with patients; and (6) patients' overall rating of their primary care provider. To help summarize patient experiences, we created six composite summary measures using 19 questions following the CAHPS Clinician and Group Survey scoring instructions (Agency for Healthcare Research and Quality 2012). Table 6.1 details the specific patient care experiences that the six summary composite measures evaluate.

Table 6.1. Experiences included in the patient survey composite measures

Timely appointments, care, and information (five 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 when phoning the provider during regular office hours
How often the patient saw the provider within 15 minutes of appointment time
Providers' communication with patients (six questions)
How often the provider provided the patient with clear explanations, listened carefully to the patient's health questions and concerns, and provided the patient with easy-to-understand instructions and information
How often the provider knew 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
Providers' knowledge of care patients received from other providers (two questions)
How often the provider seemed informed and up to date about the care the patient received from specialists
Whether practice staff spoke with the patient at each visit about all of his or her prescription medications
Providers support patients in taking care of their own health (two questions)
Whether practice staff discussed with the patient specific goals for his or her health, and asked the patient whether there are things in life that make it hard for the patient to take care of his or her health
Providers discuss medication decisions with patients (three questions)
If the provider talked with the patient about starting or stopping a prescription medicine, how often the provider talked about the reasons the patient might or might not want to take the medicine, and what the patient thought was best
Patients' rating of the provider (one question)
Patient rated the provider on a scale of 0 to 10, with 0 being the worst and 10 being the best

In addition to the 19 questions included in the six summary composite measures, there are 26 other questions that gauge patient experience, for a total of 45 questions. See Appendix B, Table B.1 for a list of survey questions.

6.2.3. Survey administration

We administered three rounds of the CPC patient survey to cross-sectional samples of Medicare FFS beneficiaries attributed to CPC and comparison practices (Table 6.2).

Table 6.2. CPC patient survey rounds and fielding dates

Round	Fielding period	Months after CPC began
1	June through October 2013	8–12
2	July through October 2014	21–24
3	July through October 2015	33–36

All of the surveys were administered by mail, following the CAHPS Clinician and Group 12-Month Survey protocol with slight modification to the timing of the mailings.[61]

6.2.4. Survey sample and response rates

Each year, we invited a sample of 59,000 of the roughly 300,000 Medicare FFS beneficiaries attributed to CPC and 21,000 of the approximately 600,000 beneficiaries attributed to comparison practices to respond to the patient survey (see Table 6.3). Using Medicare claims data, Medicare beneficiaries were attributed to practices where they received the plurality of their evaluation and management visits to primary care clinicians over the prior two years. Using survey data, we identified 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 other—that is, not attributed Medicare FFS—patients that CPC practices reported seeing in the prior year; we did not use their responses in this analysis, because it would have been too burdensome to collect a list of such patients from the comparison practices.) We sampled Medicare FFS beneficiaries in all practices that had ever participated in CPC and were still open, regardless of whether the practice was still participating in CPC at the time of survey. Only practices that closed over six months prior to the survey round were excluded from our sample.

In each survey round, we mailed survey questionnaires to a sample of an average of 120 attributed Medicare FFS beneficiaries from each of the CPC practices and an average of 24 attributed Medicare FFS beneficiaries from comparison practices. These sample sizes aimed to yield completed surveys with at least 40 attributed Medicare respondents per CPC practice and

[61] CAHPS protocol recommends sending a follow-up postcard 3–5 days after the questionnaire mailing to all sampled patients (10 days after for nonrespondents). We sent a postcard 7 days after our first questionnaire to all sampled patients, and 14 days after the second questionnaire to nonrespondents only. In addition, CAHPS recommends sending the second questionnaire 3 weeks after the first; we sent ours 5 weeks after.

14 respondents per matched set of comparison practices.[62] We followed the National Committee for Quality Assurance's sampling guidelines for the number of patients to sample in each practice; more patients are sampled in practices with more clinicians (NCQA 2011).[63] We obtained 40 or more responses for 482 of the 493 CPC practices and 14 or more responses for 321 of the 360 matched comparison sets (that include 787 comparison practices).

For each survey round, patients were randomly selected for the survey from the set of patients attributed to the practice at the time the samples were drawn, without regard to whether the patient had been eligible for (or included in) prior rounds; about 15 percent of respondents answered in multiple rounds, and 4 percent of respondents answered in all three survey rounds. In 2015, we had a response rate of 46.4 percent for CPC practices and 45.4 percent for comparison practices. These response rates were similar to the response rates for the previous two years, which were between 45.6 and 47.6 percent. Table 6.3 reports the samples used for the survey.

[62] We based the targeted sample sizes of 40 attributed Medicare FFS respondents per CPC practice and 14 respondents per matched set of comparison practices 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).

[63] For more information on our sampling design for the survey, refer to Appendix J, Part E of the design report (Peikes et al. 2014).

Table 6.3. Medicare FFS beneficiary survey sample and response rates for each of the three rounds of patient surveys

	CPC practices			Comparison practices		
Round (year)	1 (2013)	2 (2014)	3 (2015)	1 (2013)	2 (2014)	3 (2015)
Number of attributed Medicare FFS beneficiaries						
In sampling frame	308,450	321,515	339,282	605,083	593,768	640,296
Sampled	59,285	59,258	59,514	21,669	20,532	20,437
With completed surveys	25,946	26,362	25,686	9,273	8,915	9,922
In analysis sample	25,843	26,356	25,548	8,950	8,865	8,439
Response rate (percentage, unweighted)[a]	45.6	47.6	46.4	45.9	47.4	45.4
Number of practices						
Total	497	496	496	908	878	872
With completed surveys	497	496	496	819	794	790
With completed surveys in our sample	495[b]	496[c]	493[d]	818[b]	792[c]	787[d]

[a] The response rate is the number of complete eligible respondents divided by the eligible sample. The eligible sample includes a proportion of cases with unknown eligibility that we estimate are eligible following the guidelines of American Association for Public Opinion Research (AAPOR) 2016.

[b] In 2013, our sample included only 495 of the 497 total CPC practices. We removed one practice and its comparison matched set from the sample, because the calculated practice weight (a combination of matching weights and nonresponse weights) was a large outlier and would have given data from patients in the practice undue influence on the results, and one practice did not have any completed surveys in its comparison matched set. Our analysis sample includes one fewer comparison practice than what was sampled (818 versus 819), because there was one comparison practice that was matched only to the first CPC practice that was dropped (a comparison practice could be matched to more than one CPC practice, in which case it would remain in the analysis despite being matched to a dropped CPC practice).

[c] In 2014, there were 496 practices that received the CPC patient survey: 2 of the 497 total CPC practices in 2013 closed in the summer/fall of 2013, and one practice split into two practices in 2014. There are only 792 comparison practices in our final sample, because we dropped two comparison practices from the analysis when we removed the matched sets for the two CPC practices that closed at least six months before the 2014 survey.

[d] Between the 2014 and 2015 survey rounds, two CPC practices closed and two CPC practices split into two new practices, resulting in 496 CPC practices. The analysis sample has only 493 CPC practices, because 3 practices did not have any completed surveys in its comparison matched set. There are only 787 comparison practices in our final sample; we dropped 3 comparison practices from the analysis, because their matched CPC practices had closed at least six months before the survey and therefore were not sampled.

6.2.5. Analysis

We analyzed both the proportion of patients who gave the best (most favorable) responses (response scales varied from 2-point [yes/no] to 11-point [0 to 10 global rating scale]) and mean responses on a standardized 0 to 1 scale. Because the results are fairly comparable, and other studies of the effects of primary care interventions on patient experience focus on the best responses, our main analysis is on best responses (Heyworth et al. 2014; Jaén et al. 2010; Kern et al. 2013; Maeng et al. 2013). 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 received 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*.[64]

We first calculated the likelihood (predicted probability) that patients responded to a question with the best response using logistic regression analysis controlling for baseline patient and practice characteristics, and self-reported education level at the time of the survey.[65] We calculated predicted probabilities for each of the 45 questions in our survey (36 asked in all three survey rounds and 9 questions that were asked in only one or two survey rounds).

In addition to analyzing responses to individual survey questions, we also look at the six composite measures created to summarize the six dimensions of care explored in our survey. The six composites comprise 19 of the 36 questions asked in all three survey rounds following the CAHPS Clinician and Group Survey scoring instructions (Agency for Healthcare Research and Quality 2012). See Table 6.1 for a description of the six composites. The survey questions used to calculate the composite measures are outlined with a black box in Appendix B, Tables B.1–B.9. To calculate regression-adjusted composite measures for the CPC-wide and region-level samples, we first calculated composite measures for each survey respondent (patient-level composite measures) by averaging nonmissing binary indicators for whether the patient's response was the best option across each question in the composite (that is, if the composite contained four questions and the respondent answered all four and gave the best response for three of them, the patient's score for that composite measure was 0.75). OLS regressions controlled for baseline patient and practice characteristics and education level of the respondent. We ran regressions for each composite measure CPC-wide and for each region.

We tested the internal consistency reliability of the five composite measures that are formed from the responses to multiple questions (the composite measure for patients' rating of the provider is composed of only one question). Four of the five composite measures have adequate reliability with McDonald's ω values between 0.80 and 0.96. One composite—providers' knowledge of the care patient received from other providers—had less reliability ($\omega = 0.55$).

[64] There are trade-offs to the two ways of defining patient experience. Reporting the proportion of patients that gave the best responses allows us to draw comparisons between CPC and comparison practices and over time in a way that is easily understood and interpreted. However, the analysis—which focuses on only shifting the proportion answering the best response category—ignores any shifts in the other response categories (for example, a shift in the proportion of responses from third to second best). An analysis using mean responses better reflects the range of patient responses by averaging responses across all response options. However, this measure, too, is imperfect. Calculating mean responses uses the survey's ordinal scale, where options are ordered from best to worst response, but counts the movement between each option as equivalent. For example, if there are five response options, it treats the movement from the fifth to the fourth option as equivalent to a movement from the second to first option. It does not take into account objective differences between the meaning of different response options.

[65] Regression models controlled for baseline (2012) practice characteristics (practice size, medical home recognition, whether the practice had one or more meaningful EHR users, whether the practice is multispecialty, and whether the practice was independent or owned by a medical group or health system); baseline 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 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).

For the 36 questions in all three survey rounds and the six composite measures, we conducted significance tests on the year-to-year changes in the proportion of Medicare FFS patients who gave the best response for both CPC and comparison practices. We also compared changes in the proportion of patients giving the best response from 2013 to 2015 between CPC and comparison practices using difference-in-differences.

For the nine questions that were asked in only one or two survey rounds, we conducted a significance test on the within-year differences between the predicted probabilities for CPC and comparison practices.

For all regressions, we weighted estimates using patient-level nonresponse and practice-level matching weights (to ensure that CPC and comparison samples were similar) and clustered standard errors at the practice level to account for practice-level clustering as well as respondents answering in more than one round. 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 was powered to detect small effects. CPC-wide, we can detect differences of 1 to 2 percentage points over time and between CPC and comparison practices, with 80 percent power. We can detect relative differences of 3 to 6 percentage points in the region-level analyses.

To test the sensitivity of our findings, we also examined the difference-in-differences in regression-adjusted mean responses. Because the number of response options varies among questions, we first standardized responses to be on a 0 to 1 scale. For individual questions, we calculated regression-adjusted mean responses controlling for baseline patient and practice characteristics and education status at the time of the survey. To calculate mean responses for the six composite measures, we created patient-level composite measures by averaging the non-missing standardized responses across the questions in the composite measure. We then ran ordinary least squares (OLS) regressions using patient-level composite measures to obtain CPC-wide composite measures.

6.3. Results

6.3.1. CPC-wide sample

a. Composite measures

a.1. CPC practices

Among the CPC practices, from 2013 to 2015, there were statistically significant improvements that were small for three composite measures (1 to 1.5 percentage points) and modest (5.5 percentage points) in one; there were no changes over time in the other two composite measures. These results were driven by small, but mostly not statistically significant improvements from 2013 to 2014 in the six composites, and minimal changes from 2014 to 2015.

2013 to 2014 changes. From 2013 to 2014, CPC practices saw statistically significant increases in the proportion of respondents giving the best responses in two of the six composite measures: providers support patients in taking care of their own health (improved 1.8 percentage points, from 46.0 to 47.9 percent) and providers discuss medication decisions with patients

(improved 1.5 percentage points from 60.1 to 61.6 percent) (Table 6.4 and Appendix B, Table B.1). Year-to-year increases in the other four composite measures—timely appointments, care, and information; provider communication; providers' knowledge of care the patient received from other providers; and patients' rating of the provider—were even smaller and not statistically significant.

2014 to 2015 changes. From 2014 to 2015, improvements in the experiences of patients in CPC practices continued in one composite measure: providers support patients in taking care of their own health, with the proportion of best responses increasing 3.6 percentage points from 47.9 percent in 2014 to 51.5 percent in 2015. Changes for the other five composite measures between 2014 and 2015 were not statistically significant (Table 6.4 and Appendix B, Table B.1).

2013 to 2015 changes. Looking at how experiences of patients in CPC practices have changed since the first survey round—comparing 2015 responses to 2013 responses—there were statistically significant increases in four of the six composite measures: providers' knowledge of care patients received from other providers, providers support patients in taking care of their own health, providers discuss medication decisions with patients, and patients' rating of the provider. Improvements were small, between 1.0 and 1.5 percentage points for three of the composites, and larger but still modest, 5.5 percentage points for providers support patients in taking care of their health, where the proportion of patients giving the best responses increased from 46 percent in 2013 to 51.5 percent in 2015. The magnitude of this improvement could be a result of its low base score (it was the lowest of the six composites in 2013, 2014, and 2015). Between 2013 and 2015, there were no statistically significant differences in provider communication or timely appointments, care, and information.

Table 6.4. Statistically significant ($p < 0.10$) year-to-year changes in the proportion of attributed Medicare FFS patients giving the best response in each composite measure (percentage points)

Composite measures	CPC practices			Comparison practices			Difference-in-differences (2013 to 2015 CPC versus comparison)
	2013 to 2014	2014 to 2015	2013 to 2015	2013 to 2014	2014 to 2015	2013 to 2015	
Timely appointments, care, and information							
Provider communication							
Providers' knowledge of care the patient received from other providers			**(+1.0 pp)**				
Providers support patients in taking care of their own health	**(+1.8 pp)**	**(+3.6 pp)**	**(+5.5 pp)**	*(-1.9 pp)*	**(+5.8 pp)**	**(+3.9 pp)**	
Providers discuss medication decisions with patients	**(+1.5 pp)**		**(+1.2 pp)**		**(+2.2 pp)**		
Patients' rating of the provider			**(+1.5 pp)**				

Sources: CPC patient surveys administered June through October 2013, July through October 2014, and July through October 2015.

Notes: This table presents statistically significant changes in the proportion of patients giving the best responses to select questions included in the composite measures. Blank cells indicate that the change over time in that composite measure was not statistically significant. **Bolded green font** indicates a favorable, statistically significant finding at the 0.10 level; *italicized red font* indicates an unfavorable and statistically significant finding at the 0.10 level.

FFS = fee for service; pp = percentage point.

a.2. Comparison practices

Among comparison practices, there were minimal changes in patients' ratings between 2013 and 2015, consisting of small, but mostly statistically insignificant, declines between 2013 and 2014 in five of the six composite measures and small, but mostly statistically insignificant, improvements in those five composites between 2014 and 2015. Overall, comparing 2013 with 2015 ratings, comparison practices experienced a modest improvement of 3.9 percentage points in one composite measure—providers support patients in taking of their own health.

2013 to 2014 changes. From 2013 to 2014, comparison practices experienced a statistically significant decrease in the proportion of respondents giving the best responses in the composite measure for providers support patients in taking care of their own health (Table 6.4 and Appendix B, Table B.1). Changes between 2013 and 2014 in the other five composites were small and not statistically significant.

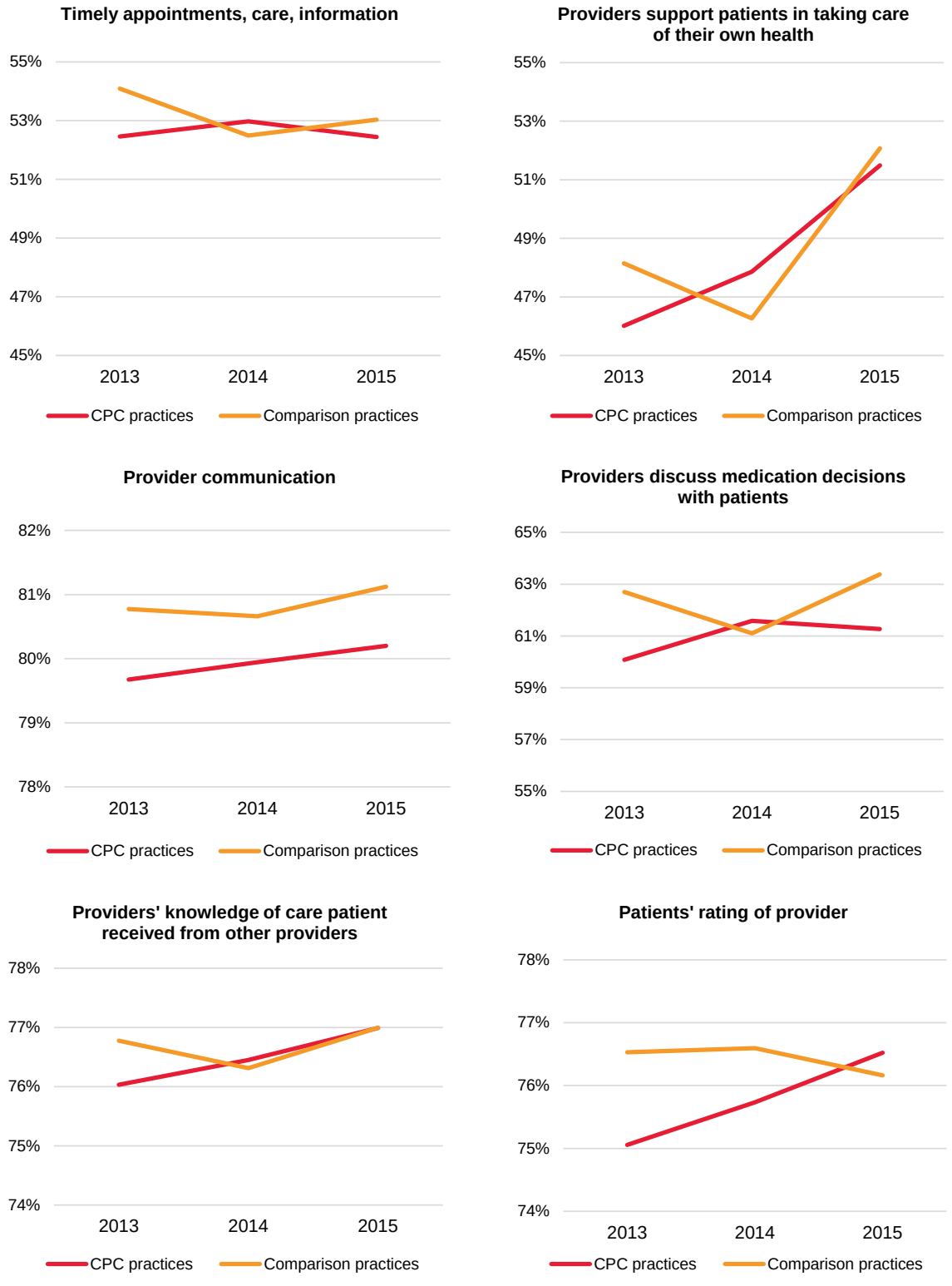
2014 to 2015 changes. Similar to CPC practices, from 2014 to 2015, comparison practices improved 5.8 percentage points in the composite measure for providers support patients in taking care of their own health, and also showed a statistically significant improvement in the composite measure for providers discuss medication decisions with patients of 2.2 percentage points.

2013 to 2015 changes. Looking at changes between the first and third survey rounds, comparison practices experienced a statistically significant improvement of 3.9 percentage points in one composite measure: providers support patients in taking care of their own health (where the proportion of patients giving the best rating increased from 48 to 52 percent), with no statistically significant changes in the other five composites.

a.3. CPC-comparison differences

In 2013, patients at comparison practices rated their practices statistically significantly higher than those at CPC practices in three of the six composite measures—providers support patients in taking care of their own health, providers discuss medication decisions with patients, and patients' rating of the provider; differences were small, between 0.6 and 2.1 percentage points. The proportion of CPC patients giving the best responses were still smaller than those in comparison practices for the remaining three composite measures, but differences were not statistically significant. By 2015, CPC practices had improved in four of the six composite measures, yet CPC practices had a statistically smaller proportion of patients giving the best responses in one composite—providers discuss medication decisions with patients—and were comparable with comparison practices in the other five composites (Figure 6.1). Although the changes over time for both CPC and comparison practices were relatively small, Figure 6.1 illustrates the dynamics over time.

Figure 6.1. Proportion of patients answering with the best response, by composite measure, CPC-wide

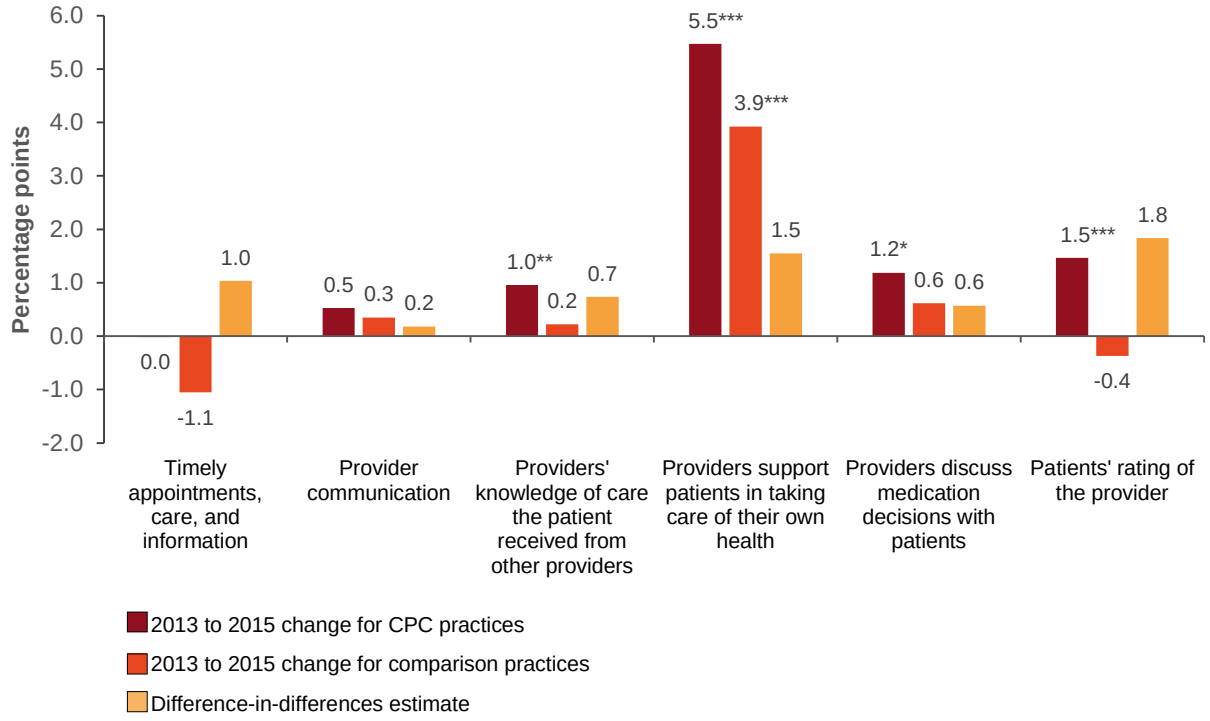


Sources: CPC patient surveys administered June through October 2013, July through October 2014, and July through October 2015.

In the second annual report (Peikes et al. 2016), the difference-in-differences estimates from 2013 to 2014 showed small and statistically significant improvements for ratings from patients in CPC practices relative to ratings from patients in comparison practices in three of the six composite measures: timely appointments, care, and information; providers support patients in taking care of their own health; and providers discuss medication decisions with patients. These estimates were driven by small year-to-year declines for comparison practices paired with small year-to-year increases for CPC practices.

Extending the follow-up to include patient experiences from 2015, the small favorable effects disappear. Difference-in-differences estimates comparing changes in patient experiences in CPC and comparison practices from 2013 to 2015 show no statistically significant effects of CPC at the conventional 10 percent significance level ($p < 0.10$) (Figure 6.2 and Appendix B, Table B.1). Because the study was well powered, the lack of effects appears to be real and not due to inadequate power.

Figure 6.2. Estimated changes in the proportion of patients answering with the best responses in the six CAHPS composite measures from 2013 to 2015, sample of attributed Medicare FFS beneficiaries CPC-wide



Sources: CPC patient surveys administered June through October 2013, July through October 2014, and July through October 2015.

*/**/*** Differences are statistically different from zero at the 0.10/0.05/0.01 level, respectively.

In 2015, both CPC and comparison practices still had substantial room for improving patient experience in three of the six CAHPS composite measures—timely appointments, care, and information; providers support patients in taking care of their own health; and providers discuss medication decisions with patients—only 52 to 63 percent of patients gave the best ratings of care. There was less room for improvement in the other three composites: 75 to 80 percent of patients in both CPC and comparison practices gave their practices the best rating for providers' communication, providers' knowledge of care the patient received from other providers, and patients' rating of the provider.

Comparison of CPC and comparison practices on the mean responses yields a similar inference as the measures representing the proportion with the best response. Estimated difference-in-differences in mean responses show no statistically significant effects of CPC at the 0.10 level (Appendix B, Table B.9).

b. Individual survey questions

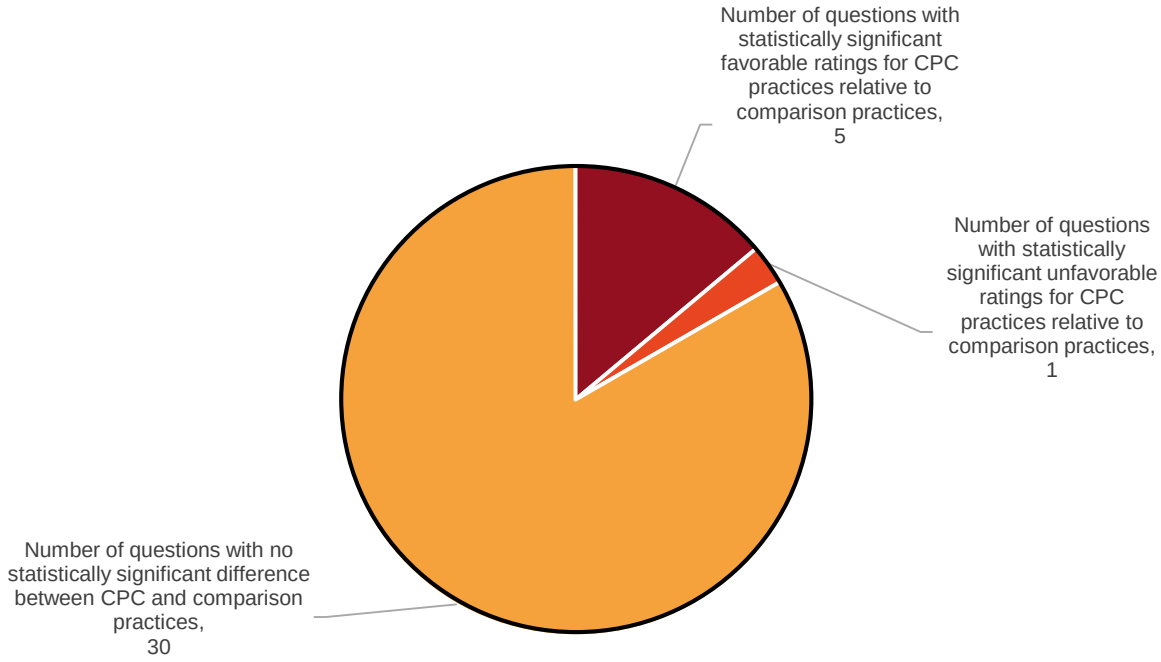
b.1. Thirty-six questions asked in all three survey rounds

CPC practices. Between 2013 and 2015, CPC practices experienced statistically significant improvements in patient ratings in half of the 36 questions asked in all three rounds. Improvements were spread across the six composite measures, but most were small or modest, ranging between 0.9 and 6.9 percentage points. Over the same time, CPC practices experienced statistically significant declines in patient ratings in 4 of the 36 questions (or about 11 percent of the questions) (Appendix B, Table B.1). These declines were also small, between 1.0 and 2.4 percentage points, and were concentrated in areas where a larger majority of patients were already rating care the best in 2013: the patient was always able to get appointments for care needed right away or for check-up or routine care; the provider always gave the patient easy-to-understand information; and if the patient required a referral, the patient was always easily able to get a referral to the specialist they needed to see.

CPC-comparison differences. Changes from 2013 to 2015 in the proportion of patients giving the best response were mostly comparable between CPC and comparison practices. There were no statistically significant differences in 30 of the 36 questions. CPC practices experienced larger improvements (between 2.2 and 6.2 percentage points) relative to comparison practices in 5 of the 36 questions—more than the 2 questions expected by chance—and a statistically significant smaller improvement relative to comparison practices in one question (unfavorable relative difference of 1.4 percentage points), about what is expected by chance (Figure 6.3).

When looking at differences in mean responses over time for CPC and comparison practices, we also find fairly similar results. There were no statistically significant differences between the two groups for 30 of the 36 questions. There were favorable differences (between 0.01 and 0.04 points on a one-point scale) for CPC practices relative to comparison practices for 6 of the 36 questions (including the five favorable differences captured when using the best response), and no unfavorable differences for CPC practices relative to comparison practices (Appendix B, Table B.9).

Figure 6.3. Distribution of difference-in-differences results: difference in the change in the proportion of patients reporting the best responses on 36 survey questions from 2013 to 2015 between CPC and comparison practices, sample of Medicare FFS beneficiaries CPC-wide



Favorable differences between 2013 and 2015 relative to comparison practices were concentrated in questions not included in the composite measures.[66] Four of the five total favorable differences were in questions not included in the composite measures. The first three of these differences relate to a patients' access to care:

- When patient phoned provider's office for care needed right away, patient usually got an appointment on same day (relative difference of 4.2 percentage points [44.8 percent of CPC practice patients in 2013]).
- Provider's office gave patient information about what to do if care was needed during evenings, weekends, or holidays (relative difference of 2.7 percentage points [77.8 percent of CPC practice patients in 2013]).
- Patient needing care during evenings, weekends, or holidays in the last 12 months was always able to get needed care from provider's office (relative difference of 6.2 percentage points [32.7 percent of CPC practice patients in 2013]).

[66] Composite measures were constructed from 19 of the 36 survey questions asked in all three survey rounds following the CAHPS Clinician and Group Survey scoring instructions (Agency for Healthcare Research and Quality 2012).

- If provider ordered a blood test, x-ray, or other test, provider's office always followed up to provide patient with test results (relative difference of 2.7 percentage points [76.4 percent of CPC practice patients in 2013]).

The fifth favorable difference is in the composite measure for providers' support patients in taking care of their own health:

- Someone in provider's office discussed with the patient during the last 12 months specific goals for his or her health (relative difference of 2.2 percentage points [59.1 percent of CPC practice patients in 2013]).

The one unfavorable difference for CPC practices relative to comparison practices was small, and in a question included in the provider communication composite measure:

- Provider always showed respect for what the patient had to say (a relative decline for CPC practices of 1.4 percentage points due to no change over time for CPC practices and a 1.4 percentage point increase for comparison practices). Though, for both CPC and comparison practices, a high proportion—87 and 89 percent of patients, respectively—answered this question with the best rating in 2015.

b.2. Nine questions asked in one or two survey rounds

In addition to the 36 questions asked in all three survey rounds, there were 9 questions asked in only or two survey rounds. For these 9 questions, we examined the within-year differences between CPC and comparison practices (Table 6.5).

Table 6.5. Estimated differences between CPC and comparison practices in the proportion of patients giving the best response to nine survey questions not asked in all rounds, for a sample of attributed Medicare FFS beneficiaries CPC-wide

	Proportion giving the best response in first year the question was asked (percentage)[a]		Difference between CPC and comparison practices, by year (percentage points)		
Question	CPC	Comparison	2013	2014	2015
Provider communication					
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 make appointments	12.7	13.5	NA	-0.8	-2.2
Transitional care					
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	69.8	65.4	4.4***	NA	NA
When patient saw provider within two weeks of most recent hospital stay, provider seemed informed and up to date about patient's hospital stay	94.6	95.7	-1.2	NA	NA
If patient stayed in a hospital overnight or longer in the last 12 months, patient was contacted by provider's office within three days of most recent hospital stay	56.5	53.3	NA	3.2*	4.8**
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	54.3	49.4	NA	4.9***	6.4***
Coordination of care across providers					
If patient received conflicting or confusing advice from other providers, provider helped patient deal with confusing and conflicting advice	72.8	74.8	NA	NA	-2.0
Patient engagement					
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	36.6	36.1	NA	0.5	-2.0*
When patient received care from provider for a chronic condition, patient was always given a copy of her/his treatment plan	46.2	42.9	NA	3.3**	2.2
Patients' rating of care					
Compared to one year ago, patient feels that the care received by the provider was much better	17.9	17.0	NA	0.9	-1.2

Sources: CPC patient surveys administered June through October 2013, July through October 2014, and July through October 2015.

[a] In these two columns, we list the proportion of patients that gave the best response the first year the question was asked. For example, the first question in the table, under provider communication, was first asked in 2014. Therefore, 12.7 and 13.5 are the proportion of patients that gave the best response to that question in 2014.

FFS = fee for service; NA = not available, because the question was not asked in the survey round.

*/**/*** Differences are statistically different from zero at the 0.10/0.05/0.01 level, respectively.

Provider communication. In 2014, among the patients at CPC and comparison practices that reported that their practice uses a web portal or website, patients were equally likely to report using their practice's web portal or website more than three times in the last 12 months to email the practice, renew medical information, request prescription renewal, or make appointments (12.7 and 13.5 percent for CPC and comparison practices, respectively) (Table 6.5). From 2014 to 2015, the proportion of patients reporting that they used their practice's portal or website at least three times increased one and three percentage points for CPC and comparison practices, respectively (Appendix B, Table B.1). However, in 2014, about 9 percent of CPC patients reported that their practice did not use a web portal or website, and 54 percent reported that they did not know whether their practice used a web portal or web site. This result fell slightly in 2015, to about 7 percent of CPC patients reporting that their practice did not use a web portal or website and 42 percent reporting that they did not know whether their practice used a web portal or web site. In both years, this result was similar for comparison practices.

Transitional care. As part of Milestone 6, CPC practices are expected to improve coordination of care across the medical neighborhood, including by patient follow-up after hospital stays and emergency department visits. Discussions with the deep-dive practices and Milestone data indicate practices were investing staff time to both track and provide timely outreach to patients after such events. CPC practices' care managers were heavily involved in calling patients within three days of an ED visit and within a week of hospital discharge. Some practices also set up procedures with hospitals and EDs to receive a daily census of discharged patients.

Patient survey responses indicate CPC practices were more likely than comparison practices to provide such care. Patients at CPC practices were more likely than patients in comparison practices to report that someone in the providers' office saw them to follow up within two weeks after discharge in the 2013 survey. A similar but different measure (patient was contacted by someone from the office within three days after hospital discharge) in the 2014 and 2015 surveys showed similar size CPC-comparison differences. CPC patients also were more likely than comparison group patients to report that they were contacted by their provider's office within one week of their most recent emergency room visit in 2014 and 2015 (this question was not asked in 2013). These favorable differences for CPC practices, while statistically significant, were modest, between 3 and 6 percentage points.

The fact that claims data indicate no CPC-comparison difference in the change in 14-day follow-up visit rate after discharge during the program period (discussed in the next chapter) suggests that CPC practices may be using non-visit-based methods for follow-up (for example, telephone calls with patients) or having staff such as care managers who cannot bill under FFS conduct follow-up. Practice respondents in the deep-dive site visits described extensive efforts to follow up with patients via telephone, which is not a billable service and would not appear in claims. The calls were typically conducted by care managers. For patients who required an in-person follow-up visit, the practices would then schedule the appointment. Findings from the 2015 CPC *practice* survey also show that CPC practices were more likely to deliver transitional care than comparison practices. Seventy-seven percent of CPC practices compared with 58 percent of comparison practices reported that follow-up with patients seen in the ED or hospital was routinely done within a few days because the practice has arrangements with the ER and

hospital to track patients. Also, in the 2015 practice survey, 90 percent of CPC practices compared with 83 percent of comparison practices reported the practice received information about patients from hospitals and emergency departments in the community within 72 hours after the event. Despite the evidence from the patient and practice surveys of more attention to transitional care, there were no effects on 30-day unplanned readmissions (discussed in the next chapter).

Coordination of care across providers. In 2015, we asked patients whether providers helped them to understand confusing and conflicting advice they received from other providers. There were no differences between patient responses in CPC and comparison practices. About 70 percent of respondents in both CPC and comparison practices reported never receiving confusing or conflicting advice. Among patients that did, 73 percent in CPC practices and 75 percent in comparison practices answered that their provider helped them to understand the information.

Patient engagement. The two measures of patient engagement revealed differences in opposite directions for CPC practices relative to comparison practices, and substantial opportunities for both groups to improve. In 2014, among patients who reported having a chronic condition, slightly more CPC practice patients than patients at comparison practices reported that they were always given a copy of their treatment plan when receiving care for a chronic condition (46 percent of CPC practice patients versus 43 percent at comparison practices), but the proportions were similar in 2015. In 2015, patients with chronic conditions at CPC practices were slightly less likely to respond that they were asked their ideas or goals when making a treatment plan (36 percent versus 38 percent) (Table 6.5 and Appendix B, Table B.1). An additional 10 percent of patients in both CPC and comparison practices with chronic illnesses reported not having made a treatment plan. The practice survey asked somewhat similar questions, and although the responses also indicate some favorable differences between CPC and comparison practices, patients report less engagement than practices report. In the 2015 practice survey, 97 percent of CPC practices and 94 percent of comparison practices reported that test results and care plans are systematically communicated to patients in ways that are either convenient to the practice or to patients, and 89 percent of CPC practices compared with 75 percent of comparison practices reported that care plans are developed collaboratively with patients and families and include self-management and clinical goals. The lower engagement reported by patients than practices could reflect different interpretations of the questions or real differences in the perceptions of patients and practices. Furthermore, based on deep-dive site visit findings, understanding of the term “care plan” varies both within and across practices. In many cases, clinicians equate the visit summary or treatment summary with the care plan. In addition, practices may not be using the terms “treatment plan” or “care plan” with patients, contributing to patients’ lack of familiarity with this term.

Overall ratings of providers and care. Despite giving responses that indicate opportunities for improvement in many aspects of care, patients remain pleased with their providers. Roughly 76 percent of both CPC and comparison practice patients rated their provider as a 9 or 10 out of 10 in 2015, a slight (1.5 percentage point statistically significant) improvement from 2013 for CPC practices, and no statistical difference for comparison practices (Appendix B, Table B.1). In 2014, we began asking patients to compare the care they received in the last 12 months with the care they received at the practice in the previous year. In both 2014 and 2015, a comparable

proportion of patients in CPC and comparison practices reported that the care they received from the provider was much better than in the prior year (about 17 percent) (Table 6.5). In 2015, there was no change at CPC practices and a small, less than two percentage point increase at comparison practices to 19 percent, yet the proportion of patients reporting much better care was statistically comparable for CPC and comparison practices just as in 2014 (Table 6.5 and Appendix B, Table B.1).

6.3.2. Region-level findings

Between 2013 and 2015 there was some variation in the regional performance of CPC practices relative to comparison practices. There were some improvements in three regions. Arkansas showed the most improvement of CPC practices relative to comparison practices over time, with favorable effects of moderate size in three of the six composite measures (4.5 to 6.2 percentage points) driven by statistically significant improvement at CPC practices in five composites and no statistically significant changes over time at comparison practices. New York and Oregon each had favorable effects in one of the six composites, driven by statistically significant declines from 2013 to 2015 at comparison practices and no changes at CPC practices. CPC practices in Colorado experienced relative declines compared with comparison practices in one composite measure. There were no statistically significant differences between CPC and comparison practices in the other three regions: New Jersey, Ohio/Kentucky, and Oklahoma (Table 6.6). CPC and comparison practices in New Jersey and Oklahoma both experienced improvement in one composite measure from 2013 to 2015—providers support patients in taking care of their own health—between 3.7 and 7.1 percentage points (although the 3.7 percentage point improvement for comparison practices in New Jersey was not statistically significant). Neither CPC nor comparison practices in these two regions experienced statistically significant changes over time in the remaining five composites. CPC practices in Ohio/Kentucky experienced statistically significant improvement from 2013 to 2015 in each of the six composite measures, between 1.9 and 5.6 percentage points. Over the same time, however, comparison practices also improved in each of the six composites (although only two were statistically significant). Thus over time, CPC and comparison practices experienced statistically comparable improvement in each composite measure.

Table 6.6. Statistically significant ($p < 0.10$) relative change between CPC and comparison practices in the proportion of attributed Medicare FFS patients giving the best response between 2013 and 2015, CPC-wide and by region

Composite measures	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Timely appointments, care, and information					**(+5.9 pp)**			
Provider communication		**(+4.6 pp)**						
Providers' knowledge of care the patient received from other providers		**(+4.5 pp)**	*(-5.9 pp)*					
Providers support patients in taking care of their own health								
Providers discuss medication decisions with patients								
Patients' rating of the provider		**(+6.2 pp)**						**(+5.1 pp)**

Sources: CPC patient surveys administered June through October 2013 and July through October 2015.

Notes: This table presents statistically significant changes in the proportion of patients giving the best responses to select questions in the composite measures. Blank cells indicate that the difference-in-differences estimate for that composite was not statistically significant. **Bolded green font** indicates a favorable, statistically significant finding at the 0.10 level (the CPC practices improved more than the comparison practices); *italicized red font* indicates an unfavorable and statistically significant finding at the 0.10 level.

FFS = fee for service; pp = percentage point.

Looking at the composite measures in which we saw favorable effects of CPC at the region level from 2013 to 2015, the favorable effects spanned four composites: timely appointments, care, and information (relative difference of 5.9 percentage points in New York); provider communication (4.6 percentage points in Arkansas); providers' knowledge of care patients received from other providers (4.5 percentage points in Arkansas); and patients' rating of the provider (6.2 and 5.1 percentage points in Arkansas and Oregon, respectively) (Table 6.6).

In Colorado, CPC practices experienced a statistically significant unfavorable difference in the change in the proportion of patients giving the best response between 2013 and 2015 relative to comparison practices in one composite measure: providers' knowledge of care patient received from other providers. The magnitude of the relative decline was 5.9 percentage points and was driven by a small but not statistically significant decrease in CPC practices (1.3 percentage points) and a statistically significant 4.6 percentage point increase in comparison practices.

6.4. Discussion

CPC practices showed small improvements in the proportion of patients giving the best ratings for three of the six CAHPS composite measures relative to comparison practices from 2013 to 2014. By 2015—three years after CPC began—however, these small favorable effects disappeared. Between 2013 and 2015, CPC practices experienced small statistically significant improvements in three composite measures. However, patients at comparison practices also reported small improvements in care in four composites, although only one change was statistically significant. After taking into account the improvements in both the CPC and comparison practices, between 2013 and 2015, CPC had no effect on patient experience measured by the six CAHPS composites.

Looking at the 36 individual questions asked in all three rounds of the survey, there were slightly more effects favoring CPC over comparison practices than expected by chance, although they were small. In addition, there were also more effects favoring CPC practices than comparison practices in the nine questions that were asked in only one or two survey rounds. One area of noticeable differences between CPC and comparison practices was in transitional care, where patients in CPC practices were 3.2 to 6.4 percentage points more likely than patients in comparison practices to give the best responses in provider follow-up after ED and hospital visits in 2013, 2014, and 2015. For the most part, however, the proportion of patients giving the best ratings were fairly comparable for the CPC and comparison practices.

These few, small favorable results suggest that the significant changes in care delivery during the first three years of the initiative did not negatively affect patient experience, and that the few improvements seen for CPC practices, relative to comparison practices, were small.

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). 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 statistically significant improvement at the 5 percent level in the proportion of respondents giving the best rating in the access-to-care composite measure (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 best rating in the composite measure 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 that they measured: communication and relationships, disease management, doctor communication, and overall rating of the doctor. However, the study did not have a comparison group to net out any secular trends that may have affected patient experience.

The main limitation to this study is that the comparison group was not chosen experimentally. Therefore, differences between patient ratings over time for the CPC and comparison practices may reflect unmeasured pre-existing differences between the two groups of patients, in addition to the effects of CPC. In some cases, where impacts show up as significant due to deterioration in comparison practices, it is unclear whether this is random variation or an artifact of the quasi-experimental design, or whether it represents an effect of CPC—in other words, CPC could be preventing deteriorations in patient experience. Further, 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 that affected the 2013 differences. Indeed, the proportions of patients giving the best 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.

7. WHAT WERE CPC'S IMPACTS ON MEDICARE EXPENDITURES, SERVICE USE, AND QUALITY OF CARE OVER THE FIRST 36 MONTHS?

CPC is expected to lower Medicare FFS expenditures and service use and improve quality of care. In this chapter, we describe the effects of CPC on claims-based health care expenditures, service use, and quality, during the first 36 months of the model (October 2012 through September 2015),[67] for Medicare FFS patients attributed to CPC versus comparison practices. The chapter focuses on impacts for CPC as a whole; we report regional analyses in Appendix C.

7.1. Overview of findings

During the first 36 months, CPC appears to have reduced emergency department (ED) visits, but it did not have a statistically significant effect on total monthly Medicare expenditures with or without care management fees, and it had minimal effects on claims-based quality-of-care measures. The ED results are consistent across most of the regions, with five of the seven regions showing a reduction in ED visits, and two of these regions having differences that are sizable and statistically significant. Aggregate estimates suggest a CPC-wide cumulative reduction of 8,947 outpatient ED visits over the three years. For expenditures, the only region for which the estimated effect was statistically significant was Oklahoma; we interpret this difference with caution, because it was driven by effects in the first program year.

Over the three years, Medicare expenditures without care management fees increased by $9 per beneficiary per month (PBPM) or 1 percent less, for the CPC group relative to the comparison group ($p = 0.15$, 90 percent confidence interval [CI] -$20 to $1) (Tables 7.1a and 7.2), when combining results for all seven regions. Estimated magnitudes of the reduction in Medicare expenditures without fees became less pronounced over time, falling from $16 in Year 1, to $10 in Year 2, to $2 in Year 3. We tested many alternative specifications of the model, outcome variable, and sample. We also conducted a Bayesian analysis (in which we allowed the estimated effects in a given region to depend in part on the CPC-wide effects) and found similar results. Effects did not vary systematically with any practice characteristics.

For high-risk patients (in the highest quartile of 2012 HCC scores), the cumulative decline between baseline and the first three years in average monthly Medicare expenditures without care management fees was $10 PBPM, or 1 percent less, for the CPC group relative to the comparison group, and not statistically significant. This was similar in magnitude to the decline observed for all beneficiaries (Table 7.1b and Table 7.2).

For two other high-risk subgroups of beneficiaries, defined based on incidence of specific chronic conditions and hospitalizations at baseline, the magnitudes of estimated impacts were more favorable, suggesting that increases in Medicare expenditures over time were smaller by $41 ($p = 0.18$) and $60 ($p = 0.101$), or 2 and 3 percent, respectively. However, the subgroup-specific impacts were not significantly different from the overall impact estimate in either case. These results suggest that the close to statistically significant favorable effects for the second of

[67] In contrast to the program years we discuss in earlier chapters, Year 1 results in this chapter reflect CPC's first 12 months [October 2012 through September 2013], Year 2 results reflect months 13 to 24 [October 2013 through September 2014], and Year 3 results reflect months 25 to 36 [October 2014 through September 2015].

these two high-risk subgroups, comprising about 6 to 9 percent of all attributed beneficiaries, depending on the year, accounts for around half of CPC's overall impact of -$9 PBPM for all beneficiaries. (This second subgroup includes beneficiaries who had at least 2 of 13 chronic conditions—congestive heart failure, chronic obstructive pulmonary disease, acute myocardial infarction, ischemic heart disease, diabetes, any type of cancer other than skin cancer, stroke, depression, dementia, atrial fibrillation, osteoporosis, rheumatoid arthritis or osteoarthritis, and chronic kidney disease—and at least two hospitalizations in the two years prior to CPC.)

Although there were no CPC-wide statistically significant savings in total Medicare expenditures over CPC's first three years, cumulative expenditure estimates by service category for the CPC group relative to the comparison group showed statistically significant reductions in expenditures for skilled nursing facilities (5 percent), outpatient services (2 percent), and primary care clinician services (2 percent). The savings in outpatient expenditures were consistent with the statistically significant reductions in annualized outpatient and total ED visits of 8 ($p = 0.07$) and 12 ($p = 0.02$) per 1,000 beneficiaries, respectively, or 2 percent, over the first three years. Although there were no offsetting, statistically significant increases in expenditures or utilization for other services, the service categories with favorable effects do not make up a large share of total Medicare expenditures, so the estimate of savings in total Medicare expenditures before fees was modest and not statistically significant.

Estimated effects on Medicare expenditures excluding fees were statistically significant over the first three years in Oklahoma only. The effect was favorable, with expenditures increasing by $22 less ($p = 0.04$) for the CPC group relative to the comparison group.

Including the care management fees, Medicare expenditures increased by $7 more for CPC than comparison practices over the first 36 months, though this difference was not statistically significant ($p = 0.27$, 90 percent CI -$3, $18). Therefore, it is highly unlikely that CPC generated enough savings to cover the $16 average PBPM fees. (Because we follow beneficiaries even if the practice no longer receives fees for them, the average PBPM fee received among ever-attributed beneficiaries was $16—less than the average specified amount over the first three years of approximately $19.)[68] Similarly, our Bayesian analysis suggests that, although there is an 80 percent probability that CPC generated a reduction in Medicare expenditures (excluding care management fees), the likelihood that those savings were greater than the $16 PBPM fee paid is only 0.1 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). Of the seven quality-of-care process measures we examined, the only statistically significant estimates were greater increases among high-risk beneficiaries for one of the two summary measures of process-of-diabetes-care for the CPC group relative to the comparison group between the year before CPC began and each of the first two years, and an improvement among both all beneficiaries and high-risk beneficiaries in one of

[68] CMS paid $20 PBPM in care management fees during quarters 1 through 9 of CPC (until December 2014), and reduced it to $15 PBPM from January 2015 onward (for the last three quarters used in this analysis). Therefore, over the first 12 quarters of CPC, the average PBPM care management fees paid for those continuing to be attributed to a practice was approximately $19. However, the average PBPM fees received in our intent-to-treat analysis sample was $16, because we retain all beneficiaries who were once attributed, even if a practice does not receive fees for them because they are no longer attributed.

the individual process measures for patients with diabetes. The difference was 2.4 percentage points (around 8 percent of the baseline rate) in one summary measure (receiving all four recommended tests we tracked for diabetes) among high-risk beneficiaries with diabetes in Year 1 and Year 2 ($p = 0.01$ and 0.03, respectively), although the effect was close to zero in Year 3 and there were no significant effects on either summary measure among all patients. For individual quality-of-care process measures for diabetes or ischemic vascular disease, since the year before CPC began, the CPC group relative to the comparison group saw a 3 percent increase ($p = 0.09$) in urine protein testing during Year 2 among all beneficiaries with diabetes, and similar statistically significant improvements of 3 percent in urine protein testing in both Years 1 and 2 ($p = 0.05$ in year 1 and $p = 0.03$ in Year 2) among high-risk beneficiaries. Among the four quality-of-care outcome measures, the only statistically significant effect was on the likelihood of an ED revisit among all beneficiaries. Consistent with the significant reductions in both outpatient and total ED visits observed for all beneficiaries that emerged in Year 3, for the CPC group relative to the comparison group, the likelihood of an ED revisit within 30 days of an outpatient ED visit declined by 5 percent ($p < 0.01$) since the year before CPC among all patients in Year 3. Given the large number of tests being conducted on the statistical significance of the CPC-wide yearly impact estimates on quality-of-care process and outcome measures (11 measures over three years, for a total of 33 tests, in the CPC-wide results), the yearly impacts for quality measures should be interpreted with caution.

We also examined the cumulative effect over the three years for the likelihood of an ED revisit, which was not statistically significant. However, given that the favorable Year 3 estimate for ED revisits was statistically significant at the one percent significance level, and was consistent with the finding that all ED visits were reduced in Year 3, it is likely to be a true effect of CPC. Additionally, a reduction in ED visits is also the type of impact of CPC that one might expect to occur if CPC improved access to care and care coordination. Finally, when deep-dive practices are asked whether they think CPC activities are having any impact on patient outcomes, they frequently note that several of their efforts are likely reducing the use of the ED. These changes include, for example, better identification and outreach by practices to patients who are frequent ED visitors, enhancements in identifying high-risk patients and more frequent outreach to them by care managers, encouraging patients to call the office before using the ED for nonurgent care, and improved accessibility to office-based primary care.

Table 7.1a. Percentage impacts on Medicare FFS expenditures and service utilization over the first three years of CPC: CPC-wide and by region (all attributed beneficiaries)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Total Medicare expenditures ($ PBPM)								
Without CPC care management fees								
Year 1	-2%**	0%	0%	-5%***	-2%	3%*	-7%***	-3%
Year 2	-1%	1%	-2%	-3%*	-2%	4%	-1%	-3%*
Year 3	0%	0%	0%	1%	-4%**	5%	-1%	-1%
Years 1, 2, and 3 combined	-1%	0%	-1%	-2%	-3%	4%	-3%**	-2%
With CPC care management fees								
Year 1	0%	2%	3%	-3%*	0%	6%***	-4%***	0%
Year 2	1%	3%*	0%	-2%	0%	7%**	1%	-1%
Year 3	1%	2%	1%	3%	-2%	7%*	0%	1%
Years 1, 2, and 3 combined	1%	2%	1%	0%	-1%	6%**	-1%	0%
Expenditures by type of service ($ PBPM)								
Inpatient								
Year 1	-4%**	0%	1%	-8%***	-7%	7%**	-11%***	-5%
Year 2	-1%	3%	1%	-7%**	-6%**	8%	-1%	-3%
Year 3	0%	0%	3%	4%	-8%***	8%	-1%	-4%
Years 1, 2, and 3 combined	-2%	1%	2%	-3%	-7%**	7%*	-4%*	-4%*
Skilled nursing facility								
Year 1	-7%**	-9%*	-4%	-6%	4%	-11%**	-18%***	0%
Year 2	-6%**	-2%	-8%	-6%	-3%	-2%	-6%	-11%***
Year 3	-3%	-8%	-2%	2%	1%	-1%	-6%	-4%
Years 1, 2, and 3 combined	-5%**	-6%	-5%	-3%	0%	-5%	-9%*	-5%
Outpatient								
Year 1	-1%	1%	-4%	-6%*	0%	2%	-2%	-2%
Year 2	-2%	1%	-6%	-6%	1%	2%	1%	-6%**
Year 3	-3%**	-1%	-8%*	-4%	-3%	0%	1%	-5%
Years 1, 2, and 3 combined	-2%**	0%	-6%**	-5%*	-1%	1%	0%	-5%**
Physician (primary care, specialist, and other noninstitutional providers)								
Year 1	0%	-1%	3%	-2%*	4%**	4%**	-1%	-3%
Year 2	0%	-4%	0%	1%	2%	5%**	-2%	-2%
Year 3	1%	0%	2%	0%	0%	6%**	-1%	0%
Years 1, 2, and 3 combined	0%	-1%	1%	0%	2%	5%**	-1%	-2%
Primary care physician								
Year 1	-4%***	-5%**	0%	-6%**	-1%	-4%	0%	-8%***
Year 2	-5%***	-8%***	-1%	-1%	-8%**	-2%	-4%	-6%*
Year 3	-1%	-9%**	2%	4%	-3%	0%	1%	2%
Years 1, 2, and 3 combined	-2%*	-5%**	1%	0%	-3%	0%	-1%	-2%
Specialist								
Year 1	-1%	-1%	-1%	-5%**	8%***	4%*	-3%	-7%*
Year 2	0%	0%	-1%	3%	1%	6%**	-6%*	-7%*
Year 3	1%	2%	2%	2%	4%	8%***	-4%	-2%
Years 1, 2, and 3 combined	1%	2%	1%	0%	5%***	9%***	-3%	-4%

Table 7.1a. *(continued)*

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Home health								
Year 1	-2%	-2%	-3%	**-10%****	-5%	*9%***	**-5%***	3%
Year 2	3%	*20%****	-3%	-2%	-5%	*13%****	-4%	3%
Year 3	2%	*17%****	9%	1%	**-17%*****	*10%***	-5%	4%
Years 1, 2, and 3 combined	1%	*12%****	1%	-3%	**-10%*****	*11%****	-5%	3%
Hospice								
Year 1	2%	*23%**	7%	8%	-14%	-13%	-7%	6%
Year 2	2%	21%	-9%	4%	2%	-13%	-2%	8%
Year 3	*11%**	25%	-11%	17%	-8%	2%	2%	*44%****
Years 1, 2, and 3 combined	5%	*23%**	-7%	10%	-7%	-8%	-2%	*19%***
DME								
Year 1	0%	2%	-3%	*10%**	-1%	1%	-4%	3%
Year 2	-2%	-3%	-4%	6%	-2%	-1%	-1%	-2%
Year 3	-4%	**-9%***	-8%	6%	-3%	-5%	4%	-2%
Years 1, 2, and 3 combined	-2%	-4%	-5%	7%	-2%	-2%	0%	0%
Service utilization (annualized rate per 1,000 beneficiaries)								
Hospitalizations								
Year 1	**-2%***	1%	2%	**-5%***	**-6%****	4%	**-6%*****	**-5%***
Year 2	-2%	0%	-2%	-3%	**-6%*****	3%	0%	-4%
Year 3	-1%	-4%	2%	2%	**-5%*****	5%	0%	-2%
Years 1, 2, and 3 combined	-2%	-1%	1%	-2%	**-6%*****	4%	-2%	-4%
Total ED visits								
Year 1	-1%	-1%	1%	0%	-1%	2%	**-5%*****	-4%
Year 2	-1%	2%	-3%	1%	2%	-1%	-1%	**-5%***
Year 3	**-2%*****	0%	0%	-1%	**-3%****	-3%	**-3%***	-3%
Years 1, 2, and 3 combined	**-2%****	0%	-1%	0%	-1%	-1%	**-3%****	**-4%***
Outpatient ED visits								
Year 1	-1%	-1%	1%	2%	2%	2%	**-6%*****	-4%
Year 2	-1%	2%	-4%	1%	*5%**	-2%	-1%	**-5%***
Year 3	**-3%*****	1%	-1%	-3%	-3%	**-5%****	**-5%****	-4%
Years 1, 2, and 3 combined	**-2%***	1%	-1%	0%	1%	-2%	**-4%****	**-5%***
Outpatient ED visits that led to observation stays								
Year 1	2%	2%	11%	2%	-3%	*13%****	-5%	5%
Year 2	*7%****	13%	13%	-5%	11%	5%	*8%****	6%
Year 3	4%	*16%****	9%	-4%	0%	-5%	*11%****	-1%
Years 1, 2, and 3 combined	*5%**	11%	12%	-3%	3%	3%	5%	3%
Primary care visits								
Year 1	-1%	-2%	*4%****	-4%	-2%	1%	-1%	-3%
Year 2	-1%	**-6%*****	1%	-2%	**-4%****	2%	2%	-1%
Year 3	-1%	**-8%*****	1%	1%	**-6%*****	3%	*6%****	1%
Years 1, 2, and 3 combined	-1%	**-6%*****	2%	-2%	**-4%*****	2%	3%	-1%
Office-based primary care visit								
Year 1	-1%	0%	*4%****	**-6%****	-1%	0%	0%	-1%
Year 2	**-2%****	**-6%****	3%	**-5%****	-3%	-1%	-2%	3%
Year 3	**-2%***	-6%	3%	**-5%****	-3%	2%	**-5%****	3%
Years 1, 2, and 3 combined	**-2%***	**-4%***	3%	**-5%****	-2%	0%	-2%	2%

Table 7.1a. *(continued)*

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Specialist visits								
Year 1	0%	1%	0%	**-4%*** **	2%	3%	**-2%***	-2%
Year 2	0%	1%	-2%	**-2%** **	0%	*5%** **	0%	-2%
Year 3	1%	3%	0%	-2%	0%	*5%** **	*2%**	-1%
Years 1, 2, and 3 combined	0%	2%	-1%	**-3%*** **	0%	*4%** **	0%	-1%

Source: Medicare claims data for October 2011 through September 2015.

Note: Impact estimates are based on a difference-in-differences analysis and reflect the difference in the regression-adjusted average outcomes for attributed Medicare FFS beneficiaries in CPC practices for a specific year compared with baseline relative to the same difference over time for attributed Medicare FFS beneficiaries in matched comparison practices. We calculate percentage impacts 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 (note, however, that increases in expenditures or use of certain services like primary care and hospice could be beneficial); **green shading** with **bolded text** signifies an annual estimate was favorable and statistically significant. Expenditures on physician services includes expenditures on primary care physician services, specialist services, and on services provided by other noninstitutional providers (the third category is not shown separately). For Medicare service use measures, observation stays are included in measures of outpatient ED visits and total ED visits. Primary care visits include both office-based primary care visits as well as primary care visits in other settings.

*/**/*** 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, PBPM = per beneficiary per month.

Table 7.1b. Percentage impacts on Medicare FFS expenditures and service utilization over the first three 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 ($ PBPM)								
Without CPC care management fees								
Year 1	**-2%***	-2%	0%	-3%	-5%	*5%***	**-9%*****	-1%
Year 2	0%	1%	1%	-3%	-2%	*7%***	-2%	0%
Year 3	0%	-1%	0%	-1%	**-4%***	*7%***	1%	1%
Years 1, 2, and 3 combined	-1%	-1%	0%	-2%	-4%	*6%****	-3%	0%
With CPC care management fees								
Year 1	0%	0%	3%	-1%	-3%	*7%****	**-7%*****	1%
Year 2	*2%**	3%	3%	-1%	0%	*9%****	0%	2%
Year 3	1%	1%	2%	1%	-3%	*8%***	2%	2%
Years 1, 2, and 3 combined	1%	1%	2%	-1%	-2%	*8%****	-2%	2%
Expenditures by type of service ($ PBPM)								
Inpatient								
Year 1	**-5%****	-4%	-1%	-3%	**-12%***	*9%***	**-13%*****	-6%
Year 2	0%	1%	1%	-6%	-5%	*12%***	1%	2%
Year 3	0%	-1%	-3%	2%	**-8%***	*9%**	4%	-4%
Years 1, 2, and 3 combined	-2%	-2%	-1%	-3%	**-8%****	*10%****	-3%	-3%
Skilled nursing facility								
Year 1	-5%	-9%	12%	-7%	3%	**-12%***	**-19%*****	6%
Year 2	**-6%***	-5%	-1%	**-9%***	-3%	1%	-8%	**-12%***
Year 3	-3%	-12%	14%	-2%	-1%	-3%	-6%	-2%
Years 1, 2, and 3 combined	-5%	-8%	8%	-6%	-1%	-5%	**-11%***	-3%
Outpatient								
Year 1	0%	4%	-7%	-4%	1%	*7%**	-3%	-1%
Year 2	2%	6%	3%	0%	3%	5%	-3%	-3%
Year 3	-1%	1%	-7%	-7%	0%	4%	3%	0%
Years 1, 2, and 3 combined	0%	4%	-3%	-4%	1%	6%	-1%	-1%
Physician (primary care, specialist, and other noninstitutional providers)								
Year 1	0%	-4%	2%	-2%	1%	*8%****	-3%	0%
Year 2	0%	-4%	-2%	1%	0%	*8%****	-3%	4%
Year 3	1%	-3%	1%	-2%	0%	*8%****	-1%	4%
Years 1, 2, and 3 combined	0%	-3%	0%	-1%	0%	*8%****	-2%	2%
Primary care physician								
Year 1	**-3%*****	**-6%****	0%	0%	-3%	-1%	-3%	**-8%*****
Year 2	-1%	**-6%****	2%	1%	-3%	3%	-2%	0%
Year 3	-1%	**-9%****	0%	2%	-4%	2%	2%	2%
Years 1, 2, and 3 combined	-2%	**-7%****	1%	1%	-3%	1%	-1%	-2%
Specialist								
Year 1	0%	-4%	0%	-4%	4%	*12%****	-5%	-2%
Year 2	0%	0%	-6%	1%	2%	*13%****	**-10%*****	-3%
Year 3	2%	0%	1%	0%	2%	*14%****	-5%	0%
Years 1, 2, and 3 combined	0%	-1%	-2%	-1%	3%	*13%****	**-7%****	-2%

Table 7.1b. *(continued)*

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Home health								
Year 1	-1%	4%	0%	-5%	-3%	4%	**-5%***	4%
Year 2	*4%**	*19%****	7%	0%	-2%	7%	-4%	6%
Year 3	1%	*21%****	*16%**	-6%	**-18%*****	6%	-7%	7%
Years 1, 2, and 3 combined	1%	*14%****	8%	-4%	**-8%****	6%	-5%	6%
Hospice								
Year 1	4%	20%	8%	2%	-12%	-6%	-10%	*18%**
Year 2	5%	22%	2%	7%	15%	-6%	0%	-3%
Year 3	*15%***	30%	13%	23%	-6%	14%	-3%	*24%**
Years 1, 2, and 3 combined	8%	*24%**	7%	11%	-2%	0%	-4%	12%
DME								
Year 1	2%	0%	-3%	*15%***	0%	5%	-3%	*11%**
Year 2	2%	-3%	**-9%***	*29%***	1%	11%	2%	2%
Year 3	-4%	**-11%***	**-16%****	9%	2%	2%	1%	0%
Years 1, 2, and 3 combined	0%	-5%	**-10%****	*17%**	1%	6%	0%	5%
Service utilization (annualized rate per 1,000 beneficiaries)								
Hospitalizations								
Year 1	-2%	-1%	7%	-2%	**-8%*****	3%	**-7%****	-5%
Year 2	0%	0%	1%	0%	**-6%****	5%	1%	-1%
Year 3	-1%	**-6%***	0%	-2%	-4%	5%	4%	0%
Years 1, 2, and 3 combined	-1%	-3%	2%	-2%	**-6%****	5%	-1%	-2%
Total ED visits								
Year 1	-1%	-2%	5%	1%	0%	0%	**-9%*****	-2%
Year 2	0%	0%	0%	4%	4%	-1%	-4%	-1%
Year 3	-1%	-2%	4%	-3%	0%	-3%	-2%	2%
Years 1, 2, and 3 combined	-1%	-1%	3%	0%	1%	-2%	**-5%***	-1%
Outpatient ED visits								
Year 1	-1%	-2%	4%	5%	6%	-1%	**-11%*****	-2%
Year 2	0%	-1%	1%	*7%**	*8%**	-3%	-5%	-1%
Year 3	-1%	0%	5%	-4%	1%	**-5%***	-6%	3%
Years 1, 2, and 3 combined	-1%	-1%	3%	2%	5%	-3%	**-7%****	0%
Outpatient ED visits that led to observation stays								
Year 1	3%	6%	1%	5%	9%	*19%**	-12%	5%
Year 2	*9%**	*26%**	5%	-2%	15%	7%	-1%	8%
Year 3	4%	*29%***	-1%	-9%	7%	-7%	11%	-3%
Years 1, 2, and 3 combined	6%	20%	2%	-3%	10%	5%	-1%	4%
Primary care visits								
Year 1	-1%	**-5%*****	*4%**	0%	-3%	*3%**	-1%	**-4%***
Year 2	-1%	**-6%*****	4%	-2%	**-4%***	4%	3%	1%
Year 3	-1%	**-12%*****	4%	0%	**-8%*****	3%	*8%***	3%
Years 1, 2, and 3 combined	-1%	**-8%*****	4%	-1%	**-5%****	3%	4%	0%
Office-based primary care visits								
Year 1	-1%	-1%	3%	-4%	0%	-1%	0%	-2%
Year 2	**-3%****	**-7%****	3%	-4%	-3%	-2%	-5%	5%
Year 3	**-3%***	**-9%***	2%	-4%	-3%	0%	**-7%****	6%
Years 1, 2, and 3 combined	**-2%****	**-6%****	2%	-4%	-2%	-1%	-4%	3%

Table 7.1b. *(continued)*

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Specialist visits								
Year 1	-1%	-1%	0%	**-4%****	-1%	*6%****	**-3%***	0%
Year 2	0%	0%	-2%	-2%	**-3%****	*7%****	-2%	2%
Year 3	1%	-1%	0%	-3%	**-5%*****	*6%****	*7%****	4%
Years 1, 2, and 3 combined	0%	-1%	0%	**-3%****	**-3%****	*6%****	0%	2%

Source: Medicare claims data for October 2011 through September 2015.

Note: Impact estimates are based on a difference-in-differences analysis and reflect the difference in the regression-adjusted average outcomes for attributed Medicare FFS beneficiaries in CPC practices for a specific year compared with baseline relative to the same difference over time for attributed Medicare FFS beneficiaries in matched comparison practices. We calculate percentage impacts 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 (note, however, that increases in expenditures or use of certain services like primary care and hospice could be beneficial); **green shading** with **bolded text** signifies an annual estimate was favorable and statistically significant. Expenditures on physician services includes expenditures on primary care physician services, specialist services, and on services provided by other noninstitutional providers (the third category is not shown separately). For Medicare service use measures, observation stays are included in measures of outpatient ED visits and total ED visits. Primary care visits include office-based primary care visits as well as primary care visits in other settings

*/**/*** 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, PBPM = per beneficiary per month.

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 three years of CPC: cumulative three-year estimates 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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Total Medicare expenditures ($ PBPM)												
Without CPC care management fees												
Baseline	$604	$606	-	-	-	-	$1,359	$1,354	-	-	-	-
Post-intervention	$804	$816	-$9	$6	-1%	0.151	$1,486	$1,491	-$10	$18	-1%	0.554
With CPC care management fees												
Baseline	$604	$606	-	-	-	-	$1,360	$1,354	-	-	-	-
Post-intervention	$821	$815	$7	$6	1%	0.266	$1,511	$1,491	$15	$18	1%	0.387
Utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	243	243	-	-	-	-	578	575	-	-	-	-
Post-intervention	301	307	-5	3	-2%	0.133	604	609	-8	9	-1%	0.373
Outpatient ED visits												
Baseline	425	438	-	-	-	-	805	818	-	-	-	-
Post-intervention	488	508	-8*	4	-2%	0.069	835	852	-5	11	-1%	0.675
Total number of observations (treatment and comparison) across all years	5,025,548						1,304,524					

Source: Medicare claims data for October 2011 through September 2015.

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 attributed Medicare FFS beneficiaries in CPC practices in Years 1, 2, and 3 combined, compared to baseline, relative to the same difference over time for attributed Medicare FFS 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, PBPM = per beneficiary per month.

Table 7.3a. Percentage impacts on selected quality-of-care process and outcome measures over the first three years of CPC: CPC-wide and by region (all attributed beneficiaries)

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Quality of care (percentage point changes)								
Among patients with diabetes—HbA1c test								
Year 1	0.2	2.6	-3.3	*-3.2***	**4.5****	-1.6	-2.0	**3.2***
Year 2	-0.1	-1.3	0.4	-2.8	0.3	-0.5	2.8	0.1
Year 3	-0.2	-1.5	0.4	-2.9	**3.2****	-1.5	2.8	-1.0
Among patients with diabetes—lipid test								
Year 1	0.0	0.1	-0.9	-0.9	**2.6****	-1.2	-1.3	**1.8***
Year 2	0.3	0.0	0.7	1.4	-0.9	-0.1	-0.2	2.2
Year 3	-0.1	-1.0	0.5	1.0	2.0	0.6	0.5	-2.4
Among patients with diabetes—eye exam								
Year 1	0.7	1.4	2.0	-0.5	0.5	1.5	*-3.5**	3.0
Year 2	0.9	1.7	**2.9****	*-5.0****	1.5	0.5	1.2	1.8
Year 3	0.2	-0.6	2.5	*-5.1****	1.5	0.5	-0.2	2.3
Among patients with diabetes—urine protein test								
Year 1	0.7	-0.1	1.7	2.6	1.4	0.5	-2.3	1.6
Year 2	**1.6***	-0.9	2.3	2.0	2.5	4.3	-2.0	**4.1****
Year 3	-0.1	-1.6	-2.5	*-8.3****	5.1	-0.9	-1.8	**6.5****
Among patients with ischemic vascular disease—lipid test								
Year 1	0.5	3.0	-0.6	-0.5	**2.0***	-1.1	1.7	-1.5
Year 2	0.1	1.0	-0.4	0.3	1.3	-2.1	0.8	0.0
Year 3	0.0	1.0	*-3.3**	0.7	0.9	-1.3	1.4	-1.1
Among patients with diabetes—all four tests performed								
Year 1	0.9	**3.4***	0.9	1.6	1.3%	1.4	*-5.8****	2.9
Year 2	1.2	1.3	1.8	-2.6	3.1%	2.8	-0.8	2.3
Year 3	-0.5	-1.7	-3.4	*-6.5****	4.3%	0.0	0.2	2.6
Among patients with diabetes—none of the four tests performed								
Year 1	0.0	0.3	0.8	0.9	**-1.4%****	0.8	1.0	**-1.8****
Year 2	-0.4	-0.9	0.5	0.0	-0.2%	0.0	0.0	**-1.2****
Year 3	-0.1	-0.7	0.3	*1.0**	**-0.8%***	0.8	0.3	-0.9
Continuity of care (percentage impact)								
Percentage of PCP visits at attributed practice								
Postintervention	-1%	3%	2%	1%	1%	-3%	-4%	-2%
Percentage of all visits at attributed practice								
Postintervention	0%	6%	5%	-1%	0%	-2%	*-6%**	2%
Bice-Boxerman Index based on PCP visits								
Postintervention	0%	6%	4%	-1%	1%	*-5%***	*-4%**	-3%
Bice-Boxerman Index based on all visits								
Postintervention	0%	5%	4%	-1%	1%	*-4%**	*-5%***	1%

Table 7.3a. *(continued)*

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Transitional care and quality-of-care outcomes (percentage point changes, unless otherwise noted)								
Likelihood of 14-day follow-up visit								
Year 1	0.0	-2.3	1.6	0.5	1.5	-1.3	0.7	1.7
Year 2	0.4	0.5	0.9	-0.5	-0.3	0.4	**2.7****	0.2
Year 3	0.5	-0.2	2.6	-0.1	0.1	0.5	-0.0	1.9
Years 1, 2, and 3 combined	0.3	-0.6	1.7	-0.1	0.4	-0.1	1.1	1.3
ACSC admissions (Percentage impact)								
Year 1	1%	6%	-2%	-1%	-4%	*6%**	-4%	1%
Year 2	1%	7%	-8%	3%	-2%	0%	4%	4%
Year 3	1%	1%	11%	-3%	**-7%***	4%	3%	1%
Years 1, 2, and 3 combined	1%	4%	0%	-1%	-6%	3%	1%	2%
Likelihood of 30-day readmission								
Year 1	-0.6	0.4	-1.3	-0.1	-0.8	-1.1	-1.1	-0.1
Year 2	-0.1	0.9	**-1.7****	-0.1	0.1	0.7	0.0	-1.0
Year 3	0.0	0.6	-0.3	-0.1	-0.6	-0.2	-0.3	0.7
Years 1, 2, and 3 combined	-0.2	0.6	**-1.1****	-0.1	-0.5	-0.2	-0.5	-0.1
Likelihood of an ED revisit within 30 days of an outpatient ED visit								
Year 1	0.0	**-0.4****	0.3	0.3	0.1	*0.5**	**-0.6****	-0.3
Year 2	0.0	-0.1	0.3	0.2	0.3	*0.4**	-0.3	**-0.5****
Year 3	**-0.3*****	**-0.4***	0.2	-0.2	-0.2	0.1	**-0.8*****	**-0.4***
Years 1, 2, and 3 combined	-0.1	**-0.3***	0.2	0.1	0.1	0.3	**-0.6****	**-0.4****

Source: Medicare claims data for October 2010 through September 2015.

Note: For quality-of-care process measures and continuity of care measures, statistically significant, favorable estimates (**bolded text**, **shaded green**) imply improvement in care quality, and statistically significant, unfavorable estimates *(italicized white text*, **shaded red**) imply 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. Percentage impacts on selected quality-of-care process and outcome measures over the first three 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 (percentage point changes)								
Among patients with diabetes—HbA1c test								
Year 1	0.1	2.3	-6.7	-3.7	**6.4****	0.1	-2.1	2.0
Year 2	-0.8	-0.9	-2.1	-3.8	1.5	-0.5	-0.2	0.1
Year 3	-0.4	-3.0	0.3	-0.9	3.3	-0.5	2.8	-3.1
Among patients with diabetes—lipid test								
Year 1	-0.1	0.5	-4.1	0.2	2.3	-0.4	-2.9	2.9
Year 2	0.3	-1.6	0.7	4.6	-2.0	0.1	*-3.5***	**5.5****
Year 3	-1.2	-2.0	-3.5	2.8	-1.9	-1.3	-0.3	-0.9
Among patients with diabetes—eye exam								
Year 1	1.3	1.5	5.4	-2.7	0.4	2.7	-3.3	**5.8****
Year 2	1.2	1.7	**6.5***	*-9.7****	**4.1***	0.2	1.5	2.7
Year 3	0.5	-0.1	5.4	*-6.8****	-1.6	1.3	0.7	3.9
Among patients with diabetes—urine protein test								
Year 1	**1.9***	-0.7	3.7	1.5	**6.3****	4.1	0.6	-0.7
Year 2	**2.1****	0.7	-0.1	1.8	3.7	3.7	-1.4	**5.4****
Year 3	0.2	-4.4	3.4	*-5.1**	2.2	0.5	-4.2	**8.9*****
Among patients with ischemic vascular disease—lipid test								
Year 1	1.0	3.9	-1.8	-0.7	**2.7***	1.7	0.7	-0.9
Year 2	0.1	1.1	-1.3	0.6	**4.6*****	-1.4	-1.5	-1.9
Year 3	0.4	2.0	-5.1	1.7	2.0	-2.5	2.4	0.1
Among patients with diabetes—all four tests performed								
Year 1	**2.4****	**4.7****	2.0	2.7	**5.6*****	3.3	*-5.0***	4.8
Year 2	**2.4****	4.6	1.8	-0.4	**6.0***	2.4	-1.6	3.7
Year 3	0.0	-2.9	-2.6	-2.4	2.8	3.4	-0.4	2.7
Among patients with diabetes—none of the four tests performed								
Year 1	0.0	-0.1	1.9	1.6	-0.6	0.2	-0.2	**-1.6***
Year 2	-0.3	-0.4	-0.3	1.0	-0.2	-0.3	-0.1	-1.6
Year 3	0.2	0.0	0.4	1.1	0.8	1.3	0.4	-1.8
Continuity of care (percentage impact)								
Percentage of PCP visits at attributed practice								
Postintervention	-1%	2%	0%	3%	0%	-2%	-5%	-2%
Percentage of all visits at attributed practice								
Postintervention	0%	5%	3%	1%	0%	0%	-6%	2%
Bice-Boxerman Index based on PCP visits								
Postintervention	0%	6%	4%	0%	0%	*-5%***	-4%	*-5%**
Bice-Boxerman Index based on all visits								
Postintervention	0%	4%	3%	1%	0%	-2%	*-4%**	0%

Table 7.3b. *(continued)*

	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Transitional care and quality-of-care outcomes (percentage point changes, unless otherwise noted)								
Likelihood of 14-day follow-up visit								
Year 1	-0.1	-2.6	1.5	-0.6	2.1	-0.4	0.1	**2.3***
Year 2	0.3	0.2	0.0	-0.9	0.1	1.9	0.6	2.1
Year 3	0.2	-2.5	1.1	-0.6	-0.3	1.0	-0.1	**5.6*****
Years 1, 2, and 3 combined	0.1	-1.7	0.8	-0.7	0.6	0.8	0.2	**3.4*****
ACSC admissions (percentage impact)								
Year 1	2%	5%	-4%	5%	-3%	*12%***	-4%	-3%
Year 2	3%	6%	-10%	11%	1%	8%	-1%	4%
Year 3	1%	-1%	0%	-5%	0%	8%	3%	-2%
Years 1, 2, and 3 combined	2%	3%	-4%	3%	-1%	*8%***	-1%	0%
Likelihood of 30-day readmission								
Year 1	-0.2	0.9	0.3	0.9	-0.7	-0.9	**-2.6****	0.9
Year 2	0.3	0.9	-1.2	0.9	1.2	0.5	-0.1	-0.5
Year 3	0.3	0.7	-0.6	-0.2	0.2	0.7	-0.1	2.1
Years 1, 2, and 3 combined	0.1	0.8	-0.5	0.5	0.2	0.0	-1.0	0.8
Likelihood of an ED revisit within 30 days of an outpatient ED visit								
Year 1	0.1	**-0.8***	*2.2****	0.7	0.1	0.6	**-1.3****	-0.8
Year 2	0.1	-0.5	*2.0***	0.7	0.3	0.6	**-1.3****	-1.0
Year 3	0.0	-0.3	*2.0***	-0.7	-0.8	0.9	-0.8	0.0
Years 1, 2, and 3 combined	0.0	-0.5	*2.1****	0.2	-0.1	0.7	**-1.1****	-0.6

Source: Medicare claims data for October 2010 through September 2015.

Note: For quality-of-care process measures and continuity of care measures, statistically significant, favorable estimates (**bolded text**, **shaded green**) imply Improvement in care quality, and statistically significant, unfavorable estimates (*italicized white text*, **shaded red**) imply 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 year before CPC began (baseline) and the period after it began for attributed Medicare FFS patients in CPC practices with changes over the same time period for beneficiaries attributed to comparison practices. We examined changes between the year before CPC and the first three years of CPC 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 pool from which we selected the comparisons included (1) those that had applied to CPC in the same regions as the CPC practices but were not selected, and (2) those in nearby areas (listed in Table 7.4) that were external to the CPC regions but that the authors and CMS considered to have reasonable similarity in their demographics and a range of market factors (that is, had "face validity") and enough practices for matching.

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 variety of baseline (prior to when CPC started in October 2012) practice characteristics—such as status as a National Committee for Quality Assurance (NCQA)- or state-recognized medical home, number of clinicians, and the presence of a Medicare-defined meaningful user of electronic health record [EHR]); market characteristics—such as household income of the practice's zip code; and average 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. We identified a match for a given CPC practice whenever the propensity score for a potential comparison practice fell within a prespecified range around the CPC practice's propensity score, with as many as five matches selected. Thus, a practice can serve as a comparison for multiple CPC practices, and a CPC practice will typically be matched to multiple comparison practices.

Our comparison practices included some applicants to CPC that were not chosen for the initiative (the internal comparison group), and an external comparison group drawn from matched comparison areas (Table 7.4). We included in the comparison practice pool the internal comparison practices, which make up 28 percent of all matched comparison practices, because

they had expressed the same willingness to participate in the initiative as the CPC practices and were therefore likely to share the same motivation and self-perceived capacity (unobserved characteristics) to provide enhanced primary care to beneficiaries. In addition, because these internal comparison practices are in the same region as the CPC practices, they are subject to the same regional conditions as the CPC practices, such as practice patterns and health care markets. Therefore, including them helps account for regional factors that could affect outcomes and are not fully accounted for by our control variables. A typical evaluation would not choose nonselected practices for its comparison group out of concern that they were functioning poorly compared with those that had been selected, or may be contaminated due to spillover benefits of CPC, because about 14 percent 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 during the evaluation period); 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 spillover effects in 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. However, we do not know which of them would have had the motivation or ability to improve care delivery demonstrated by applying to CPC. Also, potentially unobserved differences in market factors between the CPC regions and the external comparison regions could affect outcomes. Nonetheless, it was necessary to include external comparison practices, because there were too few CPC applicants that were not chosen for CPC to provide acceptable internal matches for all CPC practices.

To ensure that comparison practices were similar to CPC practices at baseline, we excluded from the potential comparison group any practice that was participating in a CMS-sponsored shared savings program in 2012. Since then, about 35 percent of comparison practices (ranging from 9 percent in Oregon to 64 percent in New Jersey) joined a CMS-sponsored shared savings program by the end of 2015; among comparison practices in CMS-sponsored initiatives, nearly 98 percent were in the Medicare Shared Savings Program (MSSP). We do not believe this approach is a shortcoming. Rather, it ensures that the evaluation answers the question of how CPC alters outcomes compared with usual care, which also changed during this time. Thus, our impact estimates capture how Medicare FFS beneficiaries fare under CPC versus how they would have fared without CPC, given the availability of the MSSP option.

Appendix D shows that CPC and comparison practices were similar on a range of market-, practice-, and patient-level characteristics. It also shows the number of matched comparison practices that we drew from the same region and the number from external regions.

In this section, as in other sections of this report, we do not adjust significance levels to account for the numerous hypothesis tests we conducted, because we do not want to increase the likelihood of failing to identify a true program effect. Instead, because total Medicare expenditures is the most important measure and encompasses effects on all services and

expenditures by type of services, we treat it 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 to measure whether CPC reduced Medicare FFS expenditures and service use and improved quality of care:

- **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 may 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:**[69]
  - 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.

[69] The initiative does not explicitly target these claims-based quality-of-care measures. Practices were required to report clinical quality measures (CQMs) based on their EHRs, but they include care received by beneficiaries from only that practice. The quality-of-care measures reported in this chapter span all of the care received by beneficiaries across all providers, not just the CPC practice. The four measures for patients with diabetes and the measure for patients with ischemic vascular disease are based on Healthcare Effectiveness Data and Information Set (HEDIS) specifications.

- 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 BBI for all office visits, including both primary care and specialist visits)[70] 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 (PBPM for Medicare expenditures, annual 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 4 quarters before CPC and the 12 quarters after CPC began, while controlling for patient, practice, and market characteristics. These models net out any remaining observable pre-existing 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 (for comparison practices only) accounting for the matching by 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. The second weight ensures that the set of comparison practices matched to a given CPC practice represents the same share of the overall comparison sample as the CPC practice represents among the full CPC sample.

For Medicare expenditures with and without care management fees and for the continuity of care measures, we estimate a linear regression. (We describe the measures and regressions in Appendix E.) 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,

[70] 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); if the patient made one visit to each of 10 providers, the BBI would be zero.

such as hospitalizations and ED visits.[71] 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, we use separate logistic regressions.[72] 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 (NCQA- 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, percentage 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 before CPC began, including demographics (age categories, race categories, gender); variables capturing Medicare and Medicaid eligibility (original reason for Medicare eligibility, dual status); and hierarchical condition category (HCC) score. In addition, the readmission and follow-up visit equations 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.

[71] 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.

[72] 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 was statistically significant in that model.

For all outcomes, we calculated effects for each of the first three years of CPC separately. For all outcomes except quality-of-care process measures, we also estimate effects cumulatively; that is, estimate a cumulative effect that is a weighted average across the first three years combined.[73] 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).

We present results 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 costly 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 high-risk beneficiaries, both for the initiative as a whole and by region. For estimates using two-tailed tests at the 10 percent significance level, the evaluation has 80 percent power to detect CPC-wide impacts of 2 percent on cumulative three-year expenditure estimates and 2.4 percent on annual expenditure estimates. Minimum detectable effects (MDEs) for annual estimates range from about 4 to 8 percent for any region. Our quarterly estimates have MDEs that are 30 percent larger than the annual MDEs, 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 about 3.5 percent for the high-risk group, compared with 2.4 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.

7.3. CPC-wide results

7.3.1. Medicare expenditures

CPC had no significant effect on Medicare FFS expenditures, *not including CPC care management fees,* during the first three 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, respectively.) Across all seven regions combined, and over the first three years considered together, CPC was associated with a reduction of $9 per beneficiary per month, or 1 percent in total Medicare expenditures without care management fees; this finding was not

[73] We estimated quarterly results but do not focus on them, because they are more variable and less important than effects over a longer period unless they show a meaningful trend. See Figure 7.3 for quarterly impact estimates for Medicare expenditures without fees.

statistically significant (p = 0.15, 90 percent confidence interval -$20 to $1) (Table 7.2). The change in Medicare expenditures without fees was more favorable for CPC beneficiaries than for the comparison group beneficiaries in five regions—Colorado, New Jersey, New York, Oklahoma, and Oregon. However, only the Oklahoma estimate was statistically significant at -$22, or 3 percent. (See Table 7.1a and the discussion of region-specific results in Appendix C, Tables C.1 through C.14.)

Examining each of the first three program years separately, the estimated reduction in expenditures without fees was $16 PBPM, or 2 percent ($p$ = 0.02), in Year 1—mainly through reductions in inpatient expenditures. However, the estimates for Year 2 (-$10 PBPM, or 1 percent; p = 0.18) and Year 3 (-$2 PBPM, or less than 0.5 percent; p = 0.81) were not statistically significant (Table 7.5), and follow a pattern that is opposite of expectations (little or no effect initially and growing slightly as practices gained experience and gradually made changes to improve care and reduce Medicare expenditures for preventable adverse events). There are no statistically significant differences between the Year 1, 2, and 3 estimates. That is, the confidence intervals around the Year 2 and 3 estimates encompass both zero and the Year 1 impact estimate (-$16), and the confidence interval around the Year 3 estimate includes both zero and the Year 2 estimate (and vice versa). Given that we cannot reject the hypothesis that Year 1, 2, and 3 effects are equivalent, we can pool the data from the three years. Although the three annual estimates are jointly significant at the 5 percent level (p = 0.04) pointing toward the possibility of gross savings before taking care management fees into account, when the three years are combined, the CPC practices have $9 PBPM lower growth in expenditures over the 36-month post-intervention period than comparison practices, narrowly missing statistical significance (p = 0.15).

Table 7.5. Regression-adjusted means and estimated difference-in-differences impact of CPC on expenditure and utilization measures during the first three 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	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Total Medicare expenditures ($ PBPM)												
Without CPC care management fees												
Baseline	$571	$573	-	-	-	-	$1,345	$1,339	-	-	-	-
Year 1	$706	$724	-$16**	$7	-2%	0.017	$1,394	$1,424	-$35*	$20	-2%	0.087
Year 2	$769	$781	-$10	$7	-1%	0.175	$1,469	$1,461	$3	$19	0%	0.887
Year 3	$830	$835	-$2	$8	0%	0.806	$1,550	$1,544	$1	$23	0%	0.952
Years 1, 2, and 3 combined	$804	$816	-$9	$6	-1%	0.151	$1,486	$1,491	-$10	$18	-1%	0.554
Test whether Year 1, 2, and 3 impacts are jointly significant	F = 2.85	*p* = 0.0364					F = 1.76	*p* = 0.1520				
With CPC care management fees												
Baseline	$571	$573	-	-	-	-	$1,345	$1,339	-	-	-	-
Year 1	$724	$723	$3	$7	0%	0.687	$1,422	$1,423	-$6	$20	0%	0.748
Year 2	$786	$781	$8	$7	1%	0.288	$1,497	$1,461	$31*	$19	2%	0.098
Year 3	$844	$835	$11	$8	1%	0.166	$1,571	$1,543	$22	$23	1%	0.339
Years 1, 2, and 3 combined	$821	$815	$7	$6	1%	0.266	$1,511	$1,491	$15	$18	1%	0.387
Test whether Year 1, 2, and 3 impacts are jointly significant	F = 0.75	*p* = 0.5241					F = 1.72	*p* = 0.1613				
Expenditures by type of service ($ PBPM)												
Inpatient												
Baseline	$198	$191	-	-	-	-	$518	$500	-	-	-	-
Year 1	$260	$264	-$11**	$4	-4%	0.014	$543	$554	-$29**	$12	-5%	0.018
Year 2	$279	$277	-$4	$5	-1%	0.411	$563	$544	$1	$12	0%	0.923
Year 3	$297	$291	$0	$4	0%	0.962	$587	$571	-$2	$13	0%	0.879
Years 1, 2, and 3 combined	$292	$291	-$5	$4	-2%	0.223	$569	$562	-$10	$10	-2%	0.319
Skilled nursing facility												
Baseline	$24	$26	-	-	-	-	$97	$101	-	-	-	-
Year 1	$48	$54	-$4**	$2	-7%	0.016	$128	$140	-$7	$5	-5%	0.191
Year 2	$57	$63	-$4**	$2	-6%	0.031	$142	$156	-$9*	$5	-6%	0.052
Year 3	$68	$71	-$2	$2	-3%	0.33	$163	$172	-$4	$6	-3%	0.445
Years 1, 2, and 3 combined	$64	$70	-$3**	$2	-5%	0.046	$149	$161	-$7	$5	-5%	0.129

Table 7.5. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Outpatient												
Baseline	$100	$105	-	-	-	-	$200	$207	-	-	-	-
Year 1	$111	$118	-$1	$1	-1%	0.319	$192	$199	$0	$3	0%	0.922
Year 2	$126	$134	-$2	$2	-2%	0.177	$212	$216	$3	$4	2%	0.382
Year 3	$137	$146	-$4**	$2	-3%	0.026	$223	$231	-$2	$4	-1%	0.71
Years 1, 2, and 3 combined	$128	$136	-$3**	$1	-2%	0.046	$208	$215	$0	$3	0%	0.885
Physician (primary care, specialist, and other noninstitutional providers)												
Baseline	$202	$197	-	-	-	-	$370	$356	-	-	-	-
Year 1	$218	$213	$0	$2	0%	0.867	$354	$340	-$1	$4	0%	0.844
Year 2	$228	$224	-$1	$2	0%	0.668	$360	$346	$0	$4	0%	0.948
Year 3	$241	$235	$2	$2	1%	0.364	$372	$356	$2	$4	1%	0.584
Years 1, 2, and 3 combined	$234	$229	$0	$2	0%	0.786	$362	$348	$1	$3	0%	0.858
Primary care physician												
Baseline	$33	$33	-	-	-	-	$62	$62	-	-	-	-
Year 1	$41	$43	-$1***	$0	-4%	0.001	$64	$66	-$2***	$1	-3%	0.008
Year 2	$43	$45	-$2***	$1	-5%	<.001	$67	$67	-$1	$1	-1%	0.316
Year 3	$47	$48	-$1	$1	-1%	0.37	$74	$74	-$1	$1	-1%	0.414
Years 1, 2, and 3 combined	$42	$43	-$1*	$0	-2%	0.051	$69	$70	-$1	$1	-2%	0.109
Specialist												
Baseline	$101	$97	-	-	-	-	$189	$178	-	-	-	-
Year 1	$118	$115	-$1	$1	-1%	0.482	$177	$167	$0	$3	0%	0.895
Year 2	$120	$116	$0	$1	0%	0.77	$176	$166	$0	$3	0%	0.925
Year 3	$121	$116	$2	$1	1%	0.252	$176	$163	$3	$3	2%	0.35
Years 1, 2, and 3 combined	$114	$109	$1	$1	1%	0.209	$176	$165	$1	$3	0%	0.779
Home health												
Baseline	$25	$29	-	-	-	-	$86	$96	-	-	-	-
Year 1	$31	$36	-$1	$1	-2%	0.129	$83	$94	-$1	$2	-1%	0.626
Year 2	$36	$39	$1	$1	3%	0.103	$91	$97	$4*	$2	4%	0.056
Year 3	$41	$44	$1	$1	2%	0.279	$97	$105	$1	$2	1%	0.645
Years 1, 2, and 3 combined	$40	$44	$0	$1	1%	0.475	$93	$101	$1	$2	1%	0.431
Hospice[a]												
Baseline	-$1	$1	-	-	-	-	$10	$15	-	-	-	-
Year 1	$14	$15	$0	$1	2%	0.631	$41	$44	$2	$2	4%	0.443
Year 2	$21	$22	$0	$1	2%	0.737	$54	$56	$3	$3	5%	0.375
Year 3	$25	$24	$2*	$1	11%	0.056	$62	$58	$8**	$3	15%	0.023
Years 1, 2, and 3 combined	$23	$23	$1	$1	5%	0.266	$55	$55	$4	$3	8%	0.103

Table 7.5. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
DME												
Baseline	$24	$24	-	-	-	-	$64	$65	-	-	-	-
Year 1	$23	$24	$0	$0	0%	0.753	$52	$52	$1	$1	2%	0.184
Year 2	$21	$22	$0	$1	-2%	0.433	$45	$45	$1	$1	2%	0.482
Year 3	$22	$23	-$1	$1	-4%	0.113	$47	$50	-$2	$2	-4%	0.206
Years 1, 2, and 3 combined	$23	$24	$0	$0	-2%	0.294	$48	$49	$0	$1	0%	0.955
Utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	231	232	-	-	-	-	570	567	-	-	-	-
Year 1	278	285	-6*	3	-2%	0.067	591	602	-14	9	-2%	0.126
Year 2	281	287	-6	4	-2%	0.138	579	578	-2	10	0%	0.813
Year 3	302	305	-3	4	-1%	0.484	617	621	-6	11	-1%	0.562
Years 1, 2, and 3 combined	301	307	-5	3	-2%	0.133	604	609	-8	9	-1%	0.373
Total ED visits												
Baseline	556	569	-	-	-	-	1,196	1,210	-	-	-	-
Year 1	629	651	-9	6	-1%	0.121	1,224	1,255	-17	16	-1%	0.286
Year 2	671	692	-8	6	-1%	0.199	1,272	1,285	1	16	0%	0.944
Year 3	718	748	-17***	7	-2%	0.008	1,363	1,391	-15	19	-1%	0.454
Years 1, 2, and 3 combined	698	724	-12**	5	-2%	0.023	1,296	1,320	-10	15	-1%	0.476
Outpatient ED visits												
Baseline	416	428	-	-	-	-	805	818	-	-	-	-
Year 1	444	459	-3	5	-1%	0.542	788	805	-4	12	-1%	0.727
Year 2	480	496	-4	5	-1%	0.398	836	847	1	13	0%	0.92
Year 3	504	531	-15***	6	-3%	0.008	881	904	-11	15	-1%	0.461
Years 1, 2, and 3 combined	488	508	-8*	4	-2%	0.069	835	852	-5	11	-1%	0.675
Outpatient ED visits that led to observation stays												
Baseline	42	43	-	-	-	-	92	93	-	-	-	-
Year 1	49	48	1	1	2%	0.382	96	94	3	4	3%	0.383
Year 2	60	57	4**	2	7%	0.018	114	106	9*	5	9%	0.068
Year 3	61	59	2	2	4%	0.215	115	111	5	5	4%	0.329
Years 1, 2, and 3 combined	59	57	3*	1	5%	0.063	109	105	6	4	6%	0.149
Primary care visits												
Baseline	6,444	6,695	-	-	-	-	10,668	10,934	-	-	-	-
Year 1	6,958	7,286	-76	52	-1%	0.148	10,882	11,279	-132	111	-1%	0.236
Year 2	7,156	7,504	-96	62	-1%	0.122	11,065	11,400	-70	139	-1%	0.616
Year 3	7,558	7,875	-66	76	-1%	0.386	11,706	12,108	-137	160	-1%	0.392
Years 1, 2, and 3 combined	7,479	7,822	-83	58	-1%	0.156	11,318	11,701	-115	124	-1%	0.352

Table 7.5. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Office-based primary care visits												
Baseline	3,990	4,005	-	-	-	-	5,915	5,718	-	-	-	-
Year 1	4,067	4,117	-34	29	-1%	0.245	5,623	5,475	-49	49	-1%	0.316
Year 2	4,017	4,107	-75**	38	-2%	0.047	5,388	5,334	-144**	64	-3%	0.025
Year 3	4,078	4,176	-83*	47	-2%	0.077	5,381	5,345	-161*	83	-3%	0.051
Years 1, 2, and 3 combined	4,112	4,194	-67*	35	-2%	0.053	5,460	5,381	-117**	57	-2%	0.04
Specialist visits												
Baseline	11,799	11,832	-	-	-	-	21,338	21,085	-	-	-	-
Year 1	12,387	12,463	-42	73	0%	0.561	20,157	20,032	-128	168	-1%	0.444
Year 2	12,898	12,946	-15	80	0%	0.854	20,153	19,981	-82	164	0%	0.62
Year 3	13,247	13,162	118	90	1%	0.187	20,272	19,888	131	191	1%	0.493
Years 1, 2, and 3 combined	13,275	13,284	25	75	0%	0.74	20,262	20,036	-28	150	0%	0.853
Total number of observations (treatment and comparison) across all years	5,025,548						1,304,524					

Source: Medicare claims data for October 2011 through September 2015.

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 attributed Medicare FFS beneficiaries in CPC practices in Year 1 or 2 compared with baseline relative to the same difference over time for attributed Medicare FFS beneficiaries in matched comparison practices. Expenditures on physician services includes expenditures on primary care physician services, specialist services, and on services provided by other noninstitutional providers (the third category is not shown separately). For Medicare service use measures, measures of outpatient ED visits and total ED visits include observation stays. Primary care visits include office-based primary care visits as well as visits in other settings.

[a] Actual hospice expenditures at baseline were close to zero, because beneficiaries had to be alive and not in hospice during the look-back period for attribution (which ended five months prior to the start of CPC in two regions, and two months prior to the start of CPC for five regions); the negative baseline estimate is a result of predicting values using regression coefficients.

*/**/*** 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, PBPM = per beneficiary per month.

Over the three years combined, expenditures for skilled nursing facility, outpatient, and primary care physician expenditures each increased less for the CPC group than for the comparison group. Although statistically significant reductions in inpatient expenditures in Year 1 and in skilled nursing facility expenditures in both Year 1 and Year 2 accounted for a sizable share of savings in total Medicare expenditures, these effects were no longer statistically significant in Year 3 (Table 7.6). In contrast, the magnitude of reduction in outpatient expenditures increased over time, and the estimate effect of -$4 PBPM, or 3 percent, became statistically significant in Year 3 ($p = 0.03$). There was a significant increase in hospice expenditures in Year 3 of $2 PBPM, or 11 percent ($p = 0.06$). The statistically significant increase in hospice costs among CPC beneficiaries relative to comparison group beneficiaries in Year 3 suggests a favorable shift toward use of end-of-life care among CPC patients that can improve quality of life and may also contribute to reductions in use of and expenditures on other services.[74] Note, however, that hospice costs account for a small share of total Medicare expenditures, and therefore, a large percentage change in hospice expenditures leads to a relatively small percentage change in total expenditures. Overall, the cumulative estimates for reductions in expenditures for skilled nursing facilities ($3, or 5 percent), outpatient services ($3, or 2 percent), and primary care clinician services ($1, or 2 percent) were each statistically significant and contributed to the cumulative estimate of a $9 reduction in total Medicare expenditures without fees, which came close to being statistically significant ($p = 0.15$). Although there were no offsetting, statistically significant increases in expenditures for other services, the service categories where there were favorable effects do not comprise a large share of total Medicare expenditures, so the estimate of savings in total Medicare expenditures before fees was modest and not statistically significant.

Table 7.6. Breakdown of savings in total Medicare FFS expenditures per beneficiary per month, by service category

	Year 1 impact estimate	Year 2 impact estimate	Year 3 impact estimate	Combined Year 1, 2, and 3 impact estimate
Total Medicare expenditures	-$16**	-$10	-$2	-$9
Inpatient	-$11**	-$4	$0	-$5
Skilled nursing facility	-$4**	-$4**	-$2	-$3**
Outpatient	-$1	-$2	-$4**	-$3**
Physician (primary care, specialist, and other noninstitutional providers)	$0	-$1	$2	$0
Primary care physician	-$1***	-$2***	-$1	-$1*
Specialist	-$1	$0	$2	$1
Home health	-$1	$1	$1	$0
Hospice	$0	$0	$2*	$1
Durable medical equipment	$0	$0	-$1	$0

Note: Expenditures on physician services include expenditures on primary care physician services, specialist services, and noninstitutional provider services (the third category is not shown separately).

*/**/*** Significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

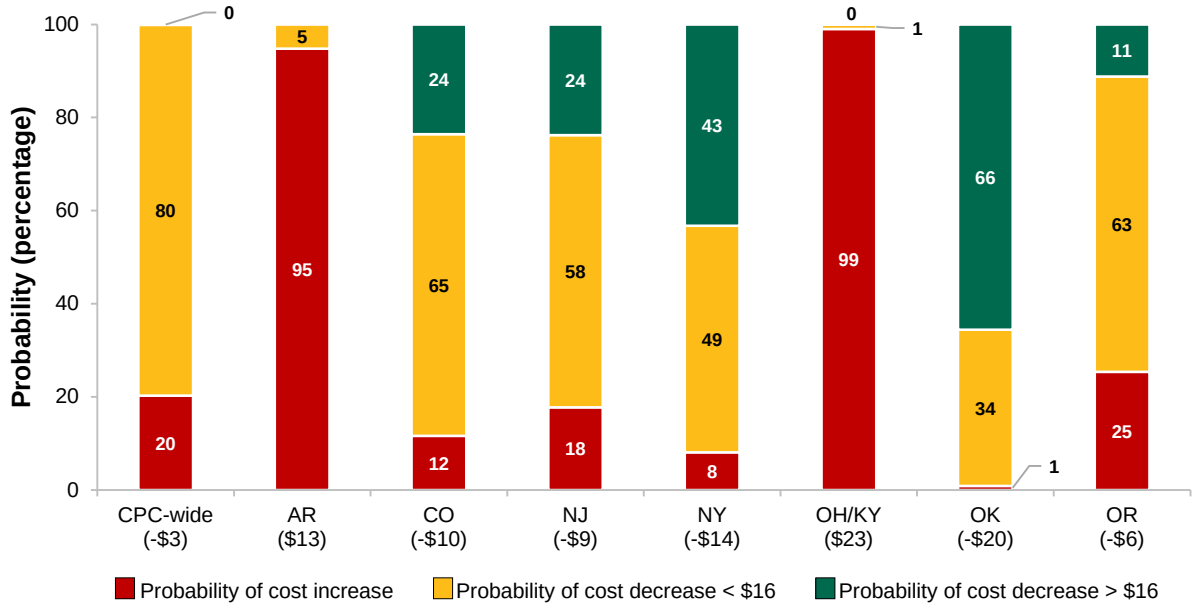
FFS = fee for service.

[74] Less than 3 percent of CPC and comparison group beneficiaries used hospice services or had any hospice costs in Year 3, and these percentages were similar across the two research groups. However, among those using hospice services, there was a relative increase in costs among CPC beneficiaries than among comparison beneficiaries from Year 2 to Year 3, by about $90 PBPM. This finding suggests an increase in the intensity or duration of hospice use in the CPC group relative to the comparison group in Year 3.

CPC did not generate net savings during the first three years and was unlikely to have been cost neutral. The impact estimate on Medicare expenditures with fees implied an increase of $7 ($p$ = 0.27) for CPC relative to comparison practices, because the $9 estimated monthly reduction in expenditures without fees over the first 36 months, which was not statistically significant, offset just over half of CPC's care management fees (Table 7.2). (The average CPC care management fee received by practices was $16 per month per CPC beneficiary in the analysis, less than the average of (1) the $20 average fee per month that CMS paid for attributed Medicare beneficiaries during quarters 1 through 9 of CPC, and (2) the $15 average fee per month paid during quarters 10 through 12, because our intent-to-treat sample follows beneficiaries even after they are no longer attributed to a CPC practice.) Although CPC did not generate savings, the 90 percent confidence interval for the $7 impact estimate for Medicare expenditures with fees among all beneficiaries was -$3 to +$18, which includes zero; this finding indicates 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 can therefore conclude from the model that, although there is an 80 percent probability that CPC generated some reduction in Medicare expenditures excluding the CPC fees, the likelihood that the savings exceeded the $16 needed for net savings is approximately 0.1 percent across all CPC regions in the initiative's first 36 months. Figure 7.1 shows, by region, the probabilities that CPC has achieved net savings (green), net losses (red), or some reduction in expenditures but less than the amount needed over the first 36 months to reach cost neutrality. The probabilities of net savings for CPC's first 36 months are computed as the average across the three post-intervention years. As with the estimates we show earlier, Arkansas and Ohio/Kentucky saw the largest cost increases, and New York and Oklahoma saw the largest savings. New York and Oklahoma both showed a substantial probability of net savings during the first three years of CPC, through September 2015 (43 and 66 percent, respectively).

Figure 7.1. Probability that CPC achieved savings during the first three years



In Table 7.7, the Bayesian results, consistent with our difference-in-differences estimates, show a much higher probability of net savings during Year 1 in most regions. As the information accumulated during Years 2 and 3 shows that these early findings were not sustained, the probability that CPC generated savings declined, dramatically for some regions. This finding suggests that the early results overstated true program effects. The sum total of the evidence over the first three years supports the conclusion of modest reductions in Medicare expenditures for usual services CPC-wide, but not enough to cover the care management fees.

Table 7.7. Probability that CPC achieved savings, by year

Year	CPC-wide	AR	CO	NJ	NY	OH/KY	OK	OR
Probability of decrease in Medicare expenditures								
1	0.98	0.40	0.77	0.98	0.87	0.04	> 0.99	0.85
2	0.81	0.05	0.88	0.88	0.90	0.03	0.94	0.81
3	0.19	0.02	0.86	0.16	0.89	0.01	0.70	0.40
1-3	0.80	0.05	0.88	0.82	0.92	0.01	0.99	0.75
Probability of exceeding CPC care management fee								
1	0.06	0.02	0.17	0.71	0.36	< 0.01	0.96	0.25
2	0.00	< 0.01	0.27	0.38	0.45	< 0.01	0.42	0.20
3	< 0.01	< 0.01	0.37	0.01	0.49	< 0.01	0.20	0.05
1-3	< 0.01	< 0.01	0.24	0.24	0.43	< 0.01	0.66	0.11

Note: In our intent-to-treat analysis sample described above, the average care management fee varied by post-intervention year. In Year 1, the average fees in the analysis sample was $18 PBPM, In Year 2 it was $17 PBPM, and in Year 3 it was $14 PBPM, for an average of $16 PBPM over the 36-month post-intervention period. The decline is due to the fact that some attributed patients in Year 1 were no longer attributed to the practice in later years, so no care management fee was paid to the practice for those patients in those later years.

Although estimated gross savings in Medicare expenditures fully offset care management fees in New York and Oklahoma, net savings were not statistically significant in those regions, and there was a statistically significant net increase in expenditures in Ohio (Table 7.8). Oklahoma had a statistically significant reduction in Medicare expenditures PBPM for services without fees of $22 (3 percent) for the first three years combined, enough to fully offset care management fees; thus, the cumulative estimate for Medicare expenditures with fees PBPM implied a reduction of $7 (not statistically significant). Similarly, in New York, cumulative estimates without and with fees were -$26 and -$9, respectively, but neither was statistically significant. Ohio/Kentucky saw unfavorable statistically significant increases in net Medicare expenditures over the first three years combined. These cumulative PBPM increases were $51 (6 percent) among all patients and $121 (8 percent) among high-risk patients. Year-specific estimates suggest that Oklahoma achieved net savings in Year 1 of $36 and $111 (4 and 7 percent), for all patients and among high-risk patients, respectively (Tables 7.1a, 7.1b, C.11, and C.12). However, estimates for Years 2 and 3 either show savings close to zero or not statistically significant net increases in costs, suggesting that the results for Year 1 may be a statistical anomaly, rather than indicative of true effects. Finally, although estimates for New York were statistically significant reductions of $36 and $71, or of 4 percent, in Medicare expenditures without fees in Year 3 for all patients and high-risk patients, respectively, the estimated reductions of $22 and $49 for net expenditures including fees in Year 3 were not statistically significant (p = 0.16 and 0.24, respectively). None of the regions had statistically significant estimates of net savings over the first three years of CPC.

Table 7.8. Regression-adjusted means and estimated difference-in-differences impact of CPC on Medicare FFS expenditures, hospitalizations, and outpatient ED visits over the first three 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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Arkansas												
Total Medicare expenditures ($ PBPM)												
Without CPC care management fees												
Baseline	$588	$612	-	-	-	-	$1,354	$1368	-	-	-	-
Post-intervention	$772	$793	$3	$13	0%	0.844	$1,428	$1450	-$7	$41	-1%	0.854
With CPC care management fees												
Baseline	$588	$612	-	-	-	-	$1,355	$1369	-	-	-	-
Post-intervention	$787	$793	$18	$13	2%	0.17	$1,451	$1450	$16	$40	1%	0.697
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	273	262	-	-	-	-	657	625	-	-	-	-
Post-intervention	333	325	-3	7	-1%	0.66	666	651	-17	19	-3%	0.356
Outpatient ED visits												
Baseline	485	479	-	-	-	-	945	908	-	-	-	-
Post-intervention	555	545	4	13	1%	0.74	944	916	-9	35	-1%	0.798
Total number of observations (treatment and comparison) across all years	968,838						256,719					
Colorado												
Total Medicare expenditures ($ PBPM)												
Without CPC care management fees												
Baseline	$559	$576	-	-	-	-	$1,354	$1410	-	-	-	-
Post-intervention	$718	$741	-$6	$20	-1%	0.763	$1,359	$1413	$3	$81	0%	0.967

Table 7.8. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
With CPC care management fees												
Baseline	$559	$575	-	-	-	-	$1,354	$1,410	-	-	-	-
Post-intervention	$735	$741	$10	$20	1%	0.592	$1,388	$1,413	$32	$81	2%	0.694
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	198	223	-	-	-	-	510	568	-	-	-	-
Post-intervention	241	264	2	10	1%	0.867	501	547	11	32	2%	0.732
Outpatient ED visits												
Baseline	380	394	-	-	-	-	771	791	-	-	-	-
Post-intervention	454	474	-6	12	-1%	0.601	827	821	26	27	3%	0.341
Total number of observations (treatment and comparison) across all years	755,806						172,329					
New Jersey												
Total Medicare expenditures ($ PBPM)												
Without CPC care management Fees												
Baseline	$683	$692	-	-	-	-	$1,464	$1,486	-	-	-	-
Post-intervention	$931	$960	-$19	$14	-2%	0.177	$1,674	$1,733	-$36	$29	-2%	0.22
With CPC care management fees												
Baseline	$682	$692	-	-	-	-	$1,464	$1,486	-	-	-	-
Post-intervention	$948	$960	-$3	$14	0%	0.838	$1,701	$1,733	-$9	$29	-1%	0.753
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	220	224	-	-	-	-	510	519	-	-	-	-
Post-intervention	292	302	-6	7	-2%	0.432	575	593	-10	16	-2%	0.558
Outpatient ED visits												
Baseline	310	325	-	-	-	-	556	579	-	-	-	-
Post-intervention	345	360	0	7	0%	0.984	575	587	11	15	2%	0.485

Table 7.8. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Total number of observations (treatment and comparison) across all years	589,642						161,590					
New York												
Total Medicare expenditures ($ PBPM)												
Without CPC care management fees												
Baseline	$617	$620	-	-	-	-	$1,311	$1,299	-	-	-	-
Post-intervention	$834	$862	-$26	$16	-3%	0.117	$1,482	$1,526	-$56	$40	-4%	0.159
With CPC care management fees												
Baseline	$617	$619	-	-	-	-	$1,311	$1,299	-	-	-	-
Post-intervention	$851	$862	-$9	$16	-1%	0.591	$1,508	$1,526	-$30	$40	-2%	0.451
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	243	222	-	-	-	-	556	510	-	-	-	-
Post-intervention	309	307	-20***	6	-6%	0.001	603	598	-40**	16	-6%	0.014
Outpatient ED visits												
Baseline	387	382	-	-	-	-	692	674	-	-	-	-
Post-intervention	448	439	3	9	1%	0.704	749	697	34	26	5%	0.185
Total number of observations (treatment and comparison) across all years	487,368						135,749					
Ohio/Kentucky												
Total Medicare expenditures ($ PBPM)												
Without CPC care management fees												
Baseline	$609	$646	-	-	-	-	$1,346	$1,374	-	-	-	-
Post-intervention	$853	$856	$34	$21	4%	0.104	$1,588	$1,523	$94***	$33	6%	0.005
With CPC care management fees												
Baseline	$609	$646	-	-	-	-	$1,346	$1,375	-	-	-	-
Post-intervention	$870	$856	$51**	$21	6%	0.015	$1,615	$1,523	$121***	$33	8%	<.001

Table 7.8. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	274	295	-	-	-	-	636	660	-	-	-	-
Post-intervention	344	351	14	13	4%	0.271	684	678	30	23	5%	0.19
Outpatient ED visits												
Baseline	460	462	-	-	-	-	827	799	-	-	-	-
Post-intervention	525	538	-11	11	-2%	0.318	871	873	-30	24	-3%	0.211
Total number of observations (treatment and comparison) across all years	638,563						174,555					
Oklahoma												
Total Medicare expenditures ($ PBPM)												
Without CPC care management Fees												
Baseline	$611	$608	-	-	-	-	$1,407	$1,404	-	-	-	-
Post-intervention	$808	$827	-$22**	$11	-3%	0.042	$1,498	$1,548	-$53	$34	-3%	0.124
With CPC care management Fees												
Baseline	$611	$609	-	-	-	-	$1,407	$1,405	-	-	-	-
Post-intervention	$823	$827	-$7	$11	-1%	0.544	$1,522	$1,549	-$29	$34	-2%	0.401
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	277	270	-	-	-	-	658	652	-	-	-	-
Post-intervention	337	336	-5	6	-2%	0.348	669	669	-6	21	-1%	0.776
Outpatient ED visits												
Baseline	471	505	-	-	-	-	896	975	-	-	-	-
Post-intervention	543	599	-22**	11	-4%	0.045	912	1,060	-69**	29	-7%	0.016
Total number of observations (treatment and comparison) across all years	734,090						190,437					

Table 7.8. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Oregon												
Total Medicare expenditures ($ PBPM)												
Without CPC care management fees												
Baseline	$573	$561	-	-	-	-	$1,273	$1252	-	-	-	-
Post-intervention	$739	$746	-$19	$11	-2%	0.101	$1,365	$1346	-$1	$38	0%	0.974
With CPC care management fees												
Baseline	$573	$561	-	-	-	-	$1,273	$1,253	-	-	-	-
Post-intervention	$756	$746	-$2	$11	0%	0.846	$1,391	$1,346	$25	$38	2%	0.517
Service utilization (annualized rate per 1,000 beneficiaries)												
Hospitalizations												
Baseline	213	203	-	-	-	-	501	479	-	-	-	-
Post-intervention	255	254	-10	7	-4%	0.151	517	506	-12	21	-2%	0.575
Outpatient ED visits												
Baseline	461	450	-	-	-	-	915	889	-	-	-	-
Post-intervention	519	533	-25*	14	-5%	0.079	937	912	-1	41	0%	0.979
Total number of observations (treatment and comparison) across all years	851,241						213,145					

Source: Medicare claims data for October 2011 through September 2015.

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 attributed Medicare FFS beneficiaries in CPC practices in Years 1, 2, and 3 combined, compared with baseline, relative to the same difference over time for attributed Medicare FFS 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, PBPM = per beneficiary per month.

Results for expenditures are not sensitive to various alterations to the model and sample. We implemented four categories of sensitivity tests to determine whether 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 F for a full discussion of these tests). Varying our difference-in-differences approach by extending the baseline period or changing the definition of the comparison group, 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 generalized linear model (GLM) log link, and models with expenditures trimmed to reduce the effects of high-cost cases, produced results similar to our main model. Similarly, excluding CPC practices that withdrew during the course of initiative and their matched comparisons did not change our findings. Finally, because the rate of participation in Medicare, accountable care organizations (ACOs) grew to 35 percent among comparison practices by 2015, and CPC practices could not participate in other Medicare initiatives such as ACOs while remaining in CPC, we included a regression control variable indicating whether a comparison practice was participating in a Medicare ACO by the end of Year 2 (that is, in December 2014).[75] Participation in a Medicare ACO by this date did not change the impact estimate for Medicare expenditures in Year 3.

However, we found three exceptions for which results differed from our main findings. First, when we used the log of actual Medicare expenditures as the dependent variable, which reduces the influence of high-cost cases, the Year 1 CPC-wide estimate was close to zero and not statistically significant, unlike in the main findings. 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 smaller or less favorable in year 1 and not statistically significant. Comparing CPC practices to only those matched comparison practices that were within the CPC region yielded somewhat larger, favorable estimated effects in all three years, but especially in year 1 with a statistically significant estimate. Third, we also found favorable and statistically significant effects on Medicare expenditures without fees in all three years when we ran a regression that controlled for the CPC application score and compared CPC practices against all unselected applicants in CPC regions (including both practices that were and were not selected to be in the CPC comparison group by the PSM matching). This finding suggests that internal comparison practices did not benefit from any potential spillover effects due to CPC's presence in their region (see Appendix F for details).

[75] Among comparison practices participating in Medicare ACOs, most were participating in MSSP.

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.

Effects for the highest risk beneficiaries were somewhat 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 studied 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 7.5). For the high-risk patients, the cumulative decline during the first three years in average monthly Medicare expenditures PBPM without care management fees relative to the comparison group was slightly larger in magnitude and about the same percentage impact as among all patients, although not statistically significant: $10 (or 1 percent) (Table 7.2). Specifically, in Year 1, the decline in expenditures without fees for high-risk patients was $35, or 2 percent (more than 80 percent of which was due to a statistically significant decline in inpatient expenditures), but the impact estimates were close to zero in the second and third program years (Table 7.5).

We also examined whether impacts varied for two other high-risk subgroups of beneficiaries, defined based on incidence of specific chronic conditions and hospitalizations at baseline: (1) beneficiaries who had at least one of the following chronic conditions—congestive heart failure, chronic obstructive pulmonary disease, acute myocardial infarction, or ischemic heart disease—and at least one hospitalization in the year before CPC; and (2) beneficiaries who had at least two of 13 chronic conditions—congestive heart failure, chronic obstructive pulmonary disease, acute myocardial infarction, ischemic heart disease, diabetes, any cancer other than skin cancer, stroke, depression, dementia, atrial fibrillation, osteoporosis, rheumatoid arthritis or osteoarthritis, and chronic kidney disease—and at least two hospitalizations in the two years prior to CPC. Compared with our main estimate, the magnitudes of estimated impacts were more favorable in these subgroups with cumulative difference-in-differences estimates of -$41 ($p = 0.18$) and -$60 ($p = 0.101$), respectively, although only slightly larger in terms of percentage impacts (2 and 3 percent, respectively, versus 1 percent for the overall results). Also, although the subgroup-specific estimate was close to being statistically significant in the second subgroup, the subgroup-specific impact was not significantly different from the main impact estimate in either case ($p = 0.26$ and 0.14, respectively). The result suggests that favorable effects for this second high-risk subgroup, comprising about 6 to 9 percent of all attributed enrollees, depending on the year, account for about half of CPC's overall impact of -$9 PBPM for all beneficiaries. However, in line with our main yearly findings, these subgroup-specific impacts were concentrated in Year 1 (too early to likely be an effect of CPC), and they weakened over time.

There was not a pattern of variation by practice type. We also studied whether impacts on expenditures varied for subgroups of *practices.* We examined variation in impacts for several sets of subgroups of practices defined before CPC began. These practices include those that

(1) were recognized as PCMHs by NCQA or their state;[76] (2) 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); (3) were small (1 or 2 physicians), medium (3 to 10 physicians), or large (10 or more physicians); (4) were small versus large practices based on the median number of patients per practice or the median number of patients per clinician in practices; (5) were hospital-owned; or (6) had high hospitalizations at baseline and low PCMH-A score in Year 1 (that is, they were performing poorly at the start of the initiative but achieved large increases in their PCMH-A scores between Year 1 and Year 3 of the initiative, indicating sizable improvement in primary care delivery). We found no statistically significant evidence for systematic variation in impacts by either PCMH status or by practice size or organizational affiliation status or by improvement in PCMH-A score or primary care delivery (not shown). In terms of magnitude of the impact over the three years, the CPC group had lower costs than the comparison group within each of the following subgroups: practices with six or more physicians or affiliated with a larger organization, practices recognized as PCMHs at baseline, hospital-owned practices, and practices without any physician meeting the meaningful use criteria at baseline; however, the impacts were not significantly different when we compared each of these subgroups to their respective counterpart. For example, the impact for CPC practices relative to comparison practices was favorable and statistically significant within the subgroup of practices that did not have a meaningful user at baseline; however, the difference in impacts between practices that had a meaningful user and those that did not was not statistically significant.

7.3.2. Service use

Because we follow the cohort of beneficiaries over time, we expect their service use to increase as they age and their health deteriorates. We refer to an impact estimate as a "relative reduction" if it suggests that CPC beneficiaries' service use increased less than their comparison group counterparts; we refer to an impact estimate as a "relative increase" if it suggests that CPC beneficiaries' service use increased more than their comparison group counterparts.

Among all patients, cumulative impact estimates showed a statistically significant relative reduction in outpatient ED visits and a relative reduction in hospitalizations that was not statisically significant, over the first three years of CPC (Table 7.1a). Specifically, relative to the comparison group, during the first three years of CPC, outpatient ED visits for CPC beneficiaries increased by eight fewer visits per 1,000 beneficiaries per year, or by 2 percent (p=0.07), and hospitalizations increased by five fewer visits per 1,000 beneficiaries per year, or by 2 percent (p=0.13). In separate yearly estimates, we detected the following statistically significant effects on Medicare service use outcomes relative to the comparison group since the year prior to CPC (Table 7.5):

[76] 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 were recognized as a medical home by their state or 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.

- A relative decrease in hospitalizations by six stays per 1,000 beneficiaries (2 percent) in Year 1. However, a similar decrease in Year 2 and a smaller relative reduction of three stays in Year 3 were not statistically significant.
- Relative decreases in outpatient ED visits and total ED visits by 15 and 17 per 1,000 beneficiaries, or 3 and 2 percent, respectively, in Year 3. Smaller relative reductions in outpatient and total ED visits by 3–4 and 8–9, respectively, in Years 1 and 2, were not significant.
- Relative decreases in primary care clinician visits in office-based settings per 1,000 beneficiaries by 75 and 83 (2 percent) in Years 2 and 3, respectively, but a smaller relative decline of 34 not significant in Year 1. Also, estimated declines in primary care clinican visits across all settings by 1 percent in each of the three years were not statistically significant.
- A relative increase in observation stays per 1,000 beneficiaries by 4 (7 percent) in Year 2 only.

For high-risk patients, the only statistically significant changes in Medicare service use outcomes for the CPC group relative to the comparison group since the period prior to CPC were:

- Relative declines in annual primary care clinician visits in office-based settings per 1,000 beneficiaries, by 144 and 161 (3 percent) in Years 2 and 3.
- An increase in observation stays per 1,000 beneficiaries by 9 (9 percent) relative to the comparison group in Year 2 only.

For the high-risk group, relative declines of 2 percent in hospitalizations during Year 1 and of 1 percent in outpatient and total ED visits in Year 3 were not statistically significant.

7.3.3. Claims-based quality of care

We found 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* or transitional care measures among all patients during the first three years of CPC was an increase of 1.6 percentage points, or 3 percent, in proportion of patients with diabetes receiving urine protein testing during Year 2 (Table 7.9). Although there was a reduction of 0.4 percentage points 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 in Year 2—this finding was not statistically significant ($p = 0.22$).

In the high-risk subgroup, the only statistically significant effects were small, but they did suggest improvements in one summary measure and in one of the four individual process-of-care measures for patients with diabetes (Table 7.9). Since the year before CPC, for the CPC group relative to the comparison group:

- The likelihood of urine protein testing among high-risk patients with diabetes increased by around 2 percentage points (3 percent) in Year 1 and Year 2, with the increase being close to zero in Year 3.

- The summary measure for the likelihood of a beneficiary with diabetes receiving all four tests (HbA1c, lipid, eye exam, and urine protein testing) increased by 2.4 percentage points (around 8 percent) in each of the first two years, but there was no effect in Year 3. These results suggest substantial opportunities for improvement. Although only 3 percent of high-risk and 4 percent of all patients with diabetes in the CPC and comparison groups had not received any of the four tests during Year 3, only about a third of patients received all four.

There were no statistically 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 9 to 13 percentage points between the periods before CPC began and during CPC. Because continuity is measured with respect to the practice that the patient was attributed to in quarter 1, continuity is high before CPC began, by definition. (This period overlaps with the quarter 1 look-back period, and beneficiaries have to have a plurality of their visits at a practice during this look-back 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 continuity really is.

Finally, for the quality-of-care outcome measures, there were no statistically significant effects on either ACSC admissions or the likelihood of an unplanned 30-day readmission among all patients or high-risk patients. However, for the CPC group relative to the comparison group, the likelihood of an ED revisit within 30 days of an outpatient ED visit declined by a statistically significant but small, 0.3 percentage points, or 5 percent of the mean, in Year 3 among all patients. This finding is consistent with the significant reductions in both outpatient and total ED visits observed for all patients in Year 3 of CPC.

Table 7.9. Regression-adjusted means and estimated difference-in-differences impact of CPC on selected quality-of-care process and outcome measures during the first three 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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Quality of care (percentage)												
Among patients with diabetes—HbA1c test												
Baseline	76.5	78.4	-	-	-	-	73.5	75.1	-	-	-	-
Year 1	77.4	79.1	0.2	0.8	-	0.792	75.3	76.8	0.1	1.1	-	0.942
Year 2	78.4	80.5	-0.1	0.9	-	0.874	76.4	78.8	-0.8	1.2	-	0.495
Year 3	77.5	79.7	-0.2	0.9	-	0.799	76.3	78.2	-0.4	1.1	-	0.707
Among patients with diabetes—lipid test												
Baseline	83.5	83.5	-	-	-	-	80.3	80.3	-	-	-	-
Year 1	84.2	84.2	0.0	0.5	-	0.946	81.7	81.9	-0.1	0.7	-	0.854
Year 2	84.2	84.0	0.3	0.7	-	0.613	81.6	81.4	0.3	1.0	-	0.789
Year 3	82.2	82.3	-0.1	0.7	-	0.883	79.1	80.3	-1.2	1.0	-	0.201
Among patients with diabetes—eye exam												
Baseline	54.2	54.3	-	-	-	-	54.0	54.3	-	-	-	-
Year 1	56.4	55.8	0.7	0.7	-	0.303	56.9	55.8	1.3	1.0	-	0.189
Year 2	56.6	55.8	0.9	0.6	-	0.144	56.6	55.7	1.2	1.0	-	0.216
Year 3	58.1	57.9	0.2	0.8	-	0.75	57.9	57.7	0.5	1.1	-	0.642
Among patients with diabetes—urine protein test												
Baseline	57.3	58.6	-	-	-	-	62.1	63.7	-	-	-	-
Year 1	60.9	61.5	0.7	0.8	-	0.373	65.0	64.6	1.9*	1.0	-	0.051
Year 2	63.7	63.4	1.6*	1.0	-	0.093	67.0	66.5	2.1**	1.0	-	0.034
Year 3	63.7	65.1	-0.1	1.4	-	0.951	73.4	74.9	0.2	1.4	-	0.903
Among patients with Ischemic vascular disease—lipid test												
Baseline	81.3	81.7	-	-	-	-	78.0	78.2	-	-	-	-
Year 1	80.4	80.3	0.5	0.8	-	0.518	77.5	76.9	1.0	1.2	-	0.401
Year 2	78.7	79.0	0.1	0.8	-	0.923	75.7	75.9	0.1	1.1	-	0.919
Year 3	76.3	76.7	0.0	0.7	-	0.945	73.5	73.4	0.4	1.1	-	0.682

Table 7.9. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Among patients with diabetes, all four tests performed												
Baseline	29.3	30.7	-	-	-	-	29.6	31.7	-	-	-	-
Year 1	32.2	32.8	0.9	0.8	-	0.256	33.4	33.0	2.4**	0.9	-	0.011
Year 2	33.3	33.6	1.2	0.8	-	0.158	33.3	33.0	2.4**	1.1	-	0.032
Year 3	30.2	32.1	-0.5	0.9	-	0.612	33.1	35.2	0.0	1.0	-	0.984
Among patients with diabetes, none of the four tests performed												
Baseline	6.3	6.1	-	-	-	-	6.4	6.2	-	-	-	-
Year 1	5.5	5.3	0.0	0.3	-	0.936	5.4	5.1	0.0	0.5	-	0.963
Year 2	5.0	5.2	-0.4	0.3	-	0.223	4.9	5.0	-0.3	0.4	-	0.427
Year 3	3.7	3.6	-0.1	0.4	-	0.757	3.2	2.8	0.2	0.5	-	0.676
Total number of observations (treatment and comparison) across all years: patients with diabetes	578,907						202,652					
Total number of observations (treatment and comparison) across all years: patients with Ischemic vascular disease	580,112						286,616					
Continuity of care (percentage)												
Percentage of PCP visits at attributed practice												
Pre-intervention	81.7	78.8	-	-	-	-	78.2	74.7	-	-	-	-
Post-intervention	68.2	65.8	-0.4	0.8	-1%	0.665	66.1	63.0	-0.4	0.9	-1%	0.67
Percentage of all visits at attributed practice												
Pre-intervention	46.2	46.4	-	-	-	-	39.5	39.6	-	-	-	-
Post-intervention	37.3	37.4	0.1	0.6	0%	0.891	33.7	33.7	0.2	0.6	0%	0.798
Bice-Boxerman Index based on PCP visits												
Pre-intervention	73.8	71.0	-	-	-	-	70.1	67.0	-	-	-	-
Post-intervention	66.4	63.8	-0.2	0.7	0%	0.802	64.9	62.1	-0.2	0.7	0%	0.748
Bice-Boxerman Index based on all visits												
Pre-intervention	34.0	34.0	-	-	-	-	28.4	28.4	-	-	-	-
Post-intervention	30.9	30.9	0.0	0.3	0%	0.978	28.2	28.1	0.0	0.4	0%	0.919

Table 7.9. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Total number of observations (treatment and comparison) across all years: measures based on PCP visits	1,458,132						448,736					
Total number of observations (treatment and comparison) across all years: measures based on all visits	1,699,500						511,874					
Transitional care and quality of care outcomes (annualized rate per 1,000 or percentage)												
Likelihood of 14-day follow-up visit (percentage)												
Baseline	62.7	62.7	-	-	-	-	67.2	67.3	-	-	-	-
Year 1	63.6	63.6	0.0	0.5	-	0.948	67.8	68.1	-0.1	0.6	-	0.850
Year 2	65.5	65.1	0.4	0.6	-	0.479	69.6	69.4	0.3	0.7	-	0.648
Year 3	66.0	65.5	0.5	0.6	-	0.403	69.8	69.8	0.2	0.8	-	0.849
Years 1, 2, and 3 combined	65.3	65.0	0.3	0.5	-	0.505	69.0	69.0	0.1	0.6	-	0.848
Total number of observations (treatment and comparison) across all years: follow-up visit	1,221,509						647,331					
ACSC admissions (annualized rate per 1,000)												
Baseline	43	46	-	-	-	-	129	134	-	-	-	-
Year 1	62	64	0	1	1%	0.698	163	165	3	4	2%	0.477
Year 2	63	64	1	1	1%	0.466	158	159	5	4	3%	0.226
Year 3	68	70	1	1	1%	0.667	166	171	1	5	1%	0.808
Years 1, 2, and 3 combined	69	71	1	1	1%	0.532	167	169	3	3	2%	0.384
Total number of observations (treatment and comparison) across all years: ACSC admissions	5,025,548						1,304,524					
Likelihood of 30-day readmission (percentage)												
Baseline	13.3	13.3	-	-	-	-	16.5	16.8	-	-	-	-
Year 1	14.7	15.2	-0.6	0.3	-	0.102	18.4	19.0	-0.2	0.5	-	0.613
Year 2	14.5	14.6	-0.1	0.3	-	0.72	17.9	17.9	0.3	0.5	-	0.587
Year 3	15.0	15.0	0.0	0.3	-	0.9	18.5	18.5	0.3	0.5	-	0.515
Years 1, 2, and 3 combined	14.7	14.9	-0.2	0.3	-	0.412	18.1	18.3	0.1	0.4	-	0.784

Table 7.9. *(continued)*

	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 (percentage)	*p*-value for estimated impact	CPC practices' predicted mean	Comparison group practices' predicted mean	Estimated impact (size)	Standard error for impact estimate	Estimated impact (percentage)	*p*-value for estimated impact
Total number of observations (treatment and comparison) across all years: readmissions	1,221,509						647,331					
Likelihood of an ED revisit within 30 days of an outpatient ED visit (percentage)												
Baseline	4.4	4.4	-	-	-	-	10.0	10.1	-	-	-	-
Year 1	4.3	4.4	0.0	0.1	-	0.696	8.8	8.8	0.1	0.2	-	0.829
Year 2	4.7	4.7	0.0	0.1	-	0.778	9.1	9.1	0.1	0.3	-	0.696
Year 3	5.1	5.4	-0.3***	0.1	-	0.006	9.8	10.0	0.0	0.3	-	0.914
Years 1, 2, and 3 combined	4.9	5.1	-0.1	0.1	-	0.2	9.2	9.3	0.0	0.2	-	0.85
Total number of observations (treatment and comparison) across all years: ED revisit	5,025,548						1,304,524					

Source: Medicare claims data for October 2010 through September 2015.

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 attributed Medicare FFS beneficiaries in CPC practices in the postintervention period compared with the preintervention period relative to the same difference over time for attributed Medicare FFS 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. For continuous quality-of-care outcome measures, we present the absolute impact estimate as well as its relative size in percentage terms. For binary quality of care outcome measures, we only present the absolute impact estimate in percentage points.

*/**/***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.

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 7.10). Based on impact estimates that were statistically significant at the 10 percent level in the CPC-wide sample (shown in bold font in Table 7.10) for these five outcomes, aggregate impacts suggest savings of $64 million in total Medicare expenditures without fees in Year 1, a reduction in hospitalizations by 1,960 stays in Year 1, and a reduction in outpatient ED visits by 6,103 in Year 3, as well as a cumulative reduction of 8,947 over the three years.

Table 7.10. Aggregate CPC-wide results, Years 1, 2, and 3

Outcome	Year 1	90 percent CI	Year 2	90 percent CI	Year 3	90 percent CI	Years 1, 2, and 3 combined	90 percent CI
Aggregated impacts across the seven CPC regions								
Total Medicare expenditures without CPC fees (in millions of dollars)	**-$64**	**(-$108, -20)**	-$43	(-$96, $9)	-$9	(-$73, $54)	-$121	(-$260, $18)
Hospitalizations	**-1,960**	**(-3,720, -200)**	-2,048	(-4,321, 226)	-1,078	(-3,612, 1,456)	-5,405	(-11,324, 514)
Outpatient ED visits	-934	(-3,454, 1,586)	-1,652	(-4,866, 1,563)	**-6,103**	**(-9,896, -2,311)**	**-8,947**	**(-17,047, -847)**
Primary care visits	-24,684	(-52,728, 3,360)	-35,736	(-73,757, 2,285)	-26,426	(-76,537, 23,684)	-91,082	(-196,647, 14,483)
30-day unplanned readmissions	-502	(-1,007, 3)	-113	(-633, 407)	-45	(-630, 541)	-659	(-1,980, 662)
Impact estimates at the beneficiary or discharge level across the seven CPC regions								
Total Medicare expenditures without CPC fees (per beneficiary per month)	**-$16**	**(-$28, -$5)**	-$10	(-$22, $2)	-$2	(-$15, $11)	-$9	(-$20, $1)
Hospitalizations (per 1,000 beneficiaries per year)	**-6**	**(-11,-1)**	-6	(-12, 1)	-3	(-9, 4)	-5	(-10, 0.5)
Outpatient ED visits (per 1,000 beneficiaries per year)	-3	(-11, 5)	-4	(-13, 4)	**-15**	**(-25, -6)**	**-8**	**(-15, -1)**
Primary care visits (per 1,000 beneficiaries per year)	-76	(-162, 10)	-96	(-199, 6)	-66	(-190, 59)	-83	(-179, 13)
30-day unplanned readmissions (percentage)	-0.6	(-1, 0)	-0.1	(-0.6, 0.4)	0	(-0.6, 0.5)	-0.2	(-0.7, 0.2)

Source: Analysis of Medicare claims data from the Chronic Conditions Warehouse Research Identifiable Files for 2011 through 2015.

Notes: This table calculates the estimated effects over all CPC regions and attributed Medicare FFS beneficiaries who were in the intent-to-treat analysis sample for Years 1, 2, and 3 of CPC. The total number of treatment group beneficiaries attributed to CPC practices in the annual analysis sample was 366,249 in Year 1, 409,973 in Year 2, and 441,805 in Year 3. The number of eligible beneficiary months for the same number of CPC beneficiaries were 3,911,723 in Year 1, 4,453,489 in Year 2, and 4,835,788 in Year 3; and the number of eligible index discharges (for readmissions) were 89,903 in Year 1, 96,728 in Year 2, and 107,995 in Year 3. For calculating the cumulative aggregate impacts (across Years 1, 2, and 3 combined), we used the impact estimates across the three years taken together and the total number of eligible beneficiary months (13,201,000) and total number of discharges (294,626) across the three 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. To help put the gross Medicare savings in perspective, the total care-management fees CMS paid for attributed Medicare FFS beneficiaries during each of the first three performance years (2013, 2014, and 2015) were $89.4 million, $77.9 million, and $59.2 million, respectively, for a cumulative payment of $226.5 million.

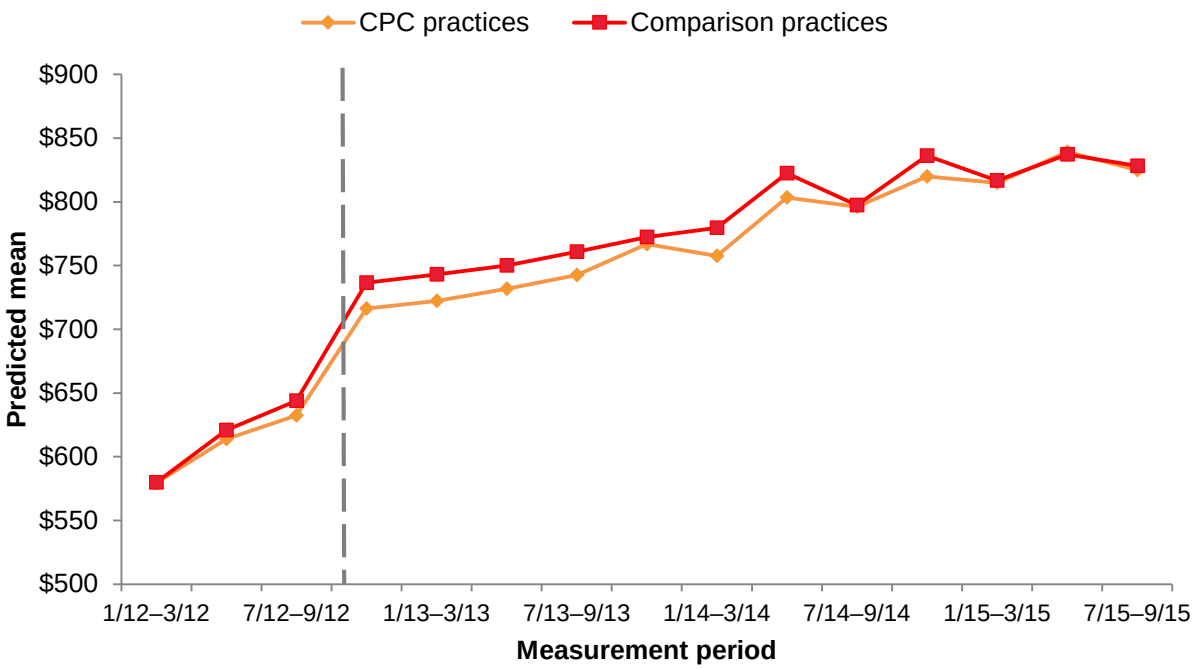
7.4. Discussion

During the first three years, CPC reduced ED visits, but had at best a small effect on total Medicare expenditures. Specifically, total monthly Medicare FFS expenditures without CPC care management fees increased by $9 less for CPC beneficiaries than for comparison beneficiaries over the first three years, but the estimated effect was not statistically significant at conventional levels ($p = 0.15$). This estimate offsets slightly more than half of the care management fees paid, which averaged $16 per month, over the first three years. Although the estimate of savings in gross Medicare expenditures observed during the first two years was statistically significant, driven by savings in inpatient and skilled nursing facility settings, these effects largely disappeared by Year 3. Nonetheless, there were statistically significant estimates of reductions in expenditures on specific types of services over the first three years including skilled nursing facilities, outpatient services, and primary care physician services, and the Bayesian estimates suggested a high probability of some gross savings, but essentially a zero probability that the savings were sufficient to cover the care management fee. The results for Medicare expenditures were robust to most of the alternative model specifications that we ran.

The trend in the annual difference-in-differences impact estimates for Medicare expenditures differs somewhat from our expectations 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 effects in Years 2 and 3, as the program matured, we see slightly (but not statistically significantly) larger estimated effects in Year 1 than in Years 2 and 3 (see Figures 7.2 and 7.3). Given that the annual estimates for the three years 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 $9 PBPM across the three years that narrowly misses statistical significance. Our overall conclusion from the analysis of Medicare expenditures over the first three years of CPC is that there are likely to be small savings in total expenditures without fees, based on (1) the Bayesian estimate of 80 percent probability that there are some savings in total expenditures; (2) the estimates in each of the three years for gross savings in total Medicare expenditures being jointly significant at the 5 percent level; and (3) the statistically significant savings in outpatient, skilled nursing facility, and primary care physician services across the three years. However, both the conventional and Bayesian analyses suggest that the savings in gross expenditures, if any, are insufficient to cover care management fees.

The attenuation of impact estimates for Medicare expenditures over time, especially in Year 3, appears to be unrelated to the reduction in care management fees from $20 to $15 PBPM in quarter 10. The implementation analysis—including interviews with deep-dive practices—did not provide any evidence that practices decreased resources devoted to care management during Year 3. There was no evidence of practices reducing staffing, and no complaints from practices about reductions in the care management fees during the most recent deep-dive visits.

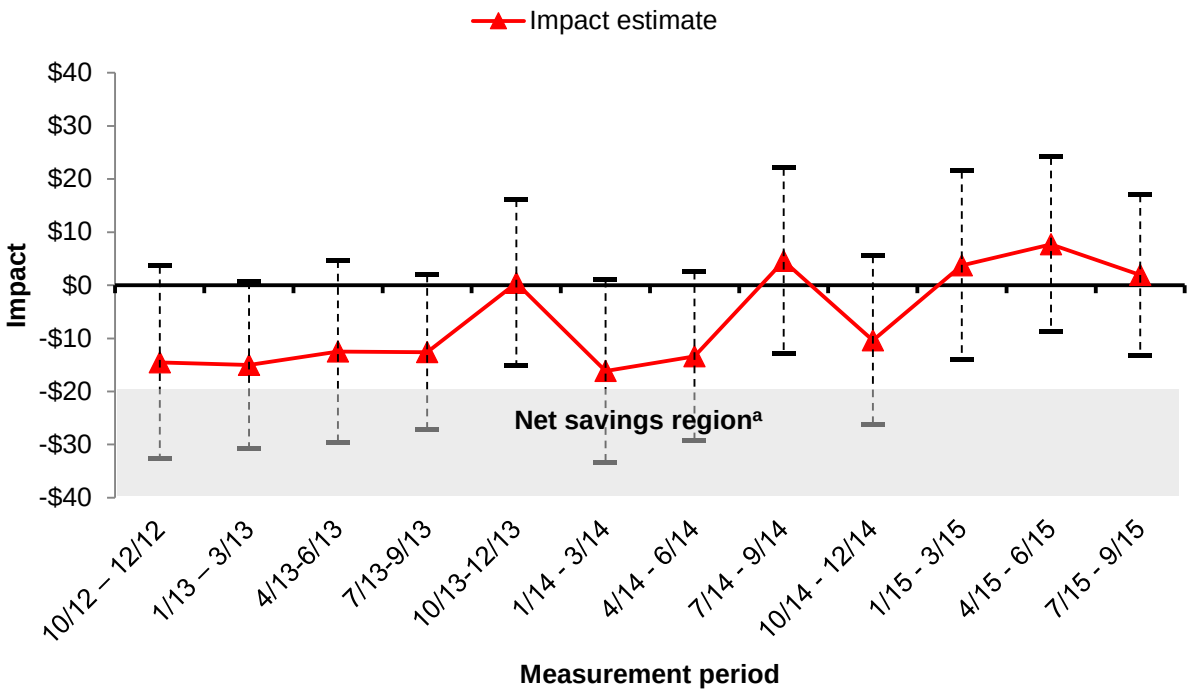
Figure 7.2. Predicted mean Medicare Part A and Part B expenditures PBPM, excluding CPC care management fees, all beneficiaries, CPC-wide



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.

PBPM = per beneficiary per month.

Figure 7.3. Estimated CPC impact on Medicare Part A and Part B expenditures PBPM, 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 attributed Medicare FFS 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 dashed vertical line through each impact estimate shows the 90 percent confidence interval.

[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.

PBPM = per beneficiary per month.

There were favorable initiative-wide effects on outpatient and total ED visits of 3 and 2 percent respectively over the first three years. Hospitalizations also increased by 2 percent less for beneficiaries attributed to CPC practices relative to those attributed to comparison practices over the first three years, though the estimated effect was not quite statistically signficant (p=0.13). The favorable initiative-wide results for ED visits among all beneficiaries were not seen among high-risk beneficiaries. Estimated effects on Medicare expenditures over the first three 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, and a reduction in the likelihood of an ED revisit within 30 days of an outpatient ED visit, during Year 3. These effects, especially the reduction in the likelihood of an ED revisit, were relatively small in magnitude.

These findings suggest that CPC is likely to have resulted in a significant reduction in the use of ED services, although it may take longer or require stronger incentives to reduce inpatient service use and generate savings sufficient to offset care management fees. Consistent with our CPC results, PCMHs were also associated with reduced ED use in other studies (Guy 2015; Pines 2015; Rosenthal 2015; Rosenthal 2013). Our implementation analysis also points toward the possibility of lower ED use arising from a number of factors directly related to changes instituted by CPC practices. For instance, when deep-dive practices are asked whether they think CPC activities are having any impact on patient outcomes, they frequently note that several of their efforts are likely reducing the use of the ED. These efforts include better identification and outreach by practices to patients who are frequent ED visitors, greater emphasis on calling the practice instead of visiting the ED for nonurgent care, enhancements in identifying high-risk patients and increased between-visit phone calls to such patients by care managers to manage chronic conditions, and improved accessibility to office-based primary care.

More generally, prior studies of diverse primary care transformation interventions have been limited and have yielded mixed results (Nichols et al. 2016; 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 et 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 et al. 2014), or did not examine costs (Friedberg et al. 2015; Rosenthal et al. 2013; Werner et 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 et al. 2014; McCall et al. 2015), but two of these are in unique settings and with only one payer (Kahn et al. 2015; Werner et al. 2014; Lemak et al. 2015), and the third has found mixed results (Nichols et al. 2016). Thus, this study of the impacts of CPC after three 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 on some features, such as size, patient mix, and ownership, and outcomes for patients in CPC practices are being compared with 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 pattern of larger estimated impacts on Medicare expenditures early on, declining each year, is the opposite of expectations, making these results somewhat suspect (although the estimates were not significantly different from each other statistically). In contrast, the larger and statistically significant effects on ED visits in Year 3 are in line with expectations and perhaps more likely to be true effects of improvements in primary care delivery in CPC practices.

In the final year of our analysis of CPC, we will continue to conduct sensitivity tests and analyses of the relationship between practice changes and reductions in Medicare expenditure drivers, to maximize learning from the evaluation. If overall program impacts continue to remain low, we will focus efforts on trying to explain why this occurs. That analysis will include investigating barriers to practices' ability to reduce Medicare expenditures and improve quality of care outcomes, and the possibly offsetting effects of other factors that may be affecting outcomes for the comparison practices. We will also continue to investigate whether CPC appears to be improving outcomes more quickly than comparison practices for particular subgroups of practices and patients.

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8. HOW IS PRACTICE TRANSFORMATION LINKED TO CHANGES IN SERVICE USE AND MEDICARE EXPENDITURES?

In this chapter, we present preliminary analyses of the association between improvements in CPC practices' care delivery between baseline and three years later—as reported in CPC's annual surveys of practices—and changes in hospitalization rates and other key service use and expenditure outcomes over the same time frame. Improvements in scores are derived from self-reported responses to questions in the modified PCMH-Assessment (M-PCMH-A) collected soon after CPC began (baseline) and in a follow-up survey conducted three years later. We do not include comparison practices in this analysis, because we collected baseline data from the M-PCMH-A, used to measure practice transformation, from only CPC practices.

This analysis builds in a number of ways on analyses we conducted in the second annual report on CPC. In that preliminary analysis, we found that practices' change between baseline and the second program year of CPC (2014) in a composite index ("score") of 37 M-PCMH-A measures was associated with large and statistically significant reductions in their hospitalization rate over that time period. The work we present here reflects three substantial changes to our prior analysis:

1. We shift to PY2015 measures of both change in M-PCMH-A measures and change in outcomes.
2. We examine the relationship of M-PCMH-A changes to changes in other service use and expenditure outcomes.
3. We assess whether practice ownership by a hospital or larger system affects the estimated relationship between care delivery changes and outcomes.

8.1. Key points

The results suggest that practice transformation, as measured by increases in the overall score, specific domains, and individual items of the M-PCMH-A, had at best a weak association with changes in Medicare service use and expenditures between baseline and 2015, the third year of the initiative. Specifically, we find that:

1. The strong relationship observed for 2014 between a summary score of practice transformation and reduction in hospitalizations does not exist when 2015 measures are used for both the M-PCMH-A and hospitalizations. In other words, CPC practices that made larger improvements in care delivery had bigger reductions in hospitalizations in 2014, but not in 2015.
    - The change in findings is not due to changes in M-PCMH-A variables, which were small between 2014 and 2015.
    - The relationship between score improvement and hospitalization rate reductions changed. The average hospitalization rates in 2014 and 2015 were similar—and both lower than at baseline. However, the hospitalization rates for many individual practices were quite different in 2015 than in 2014. Thus, the reductions in 2015 hospitalizations since baseline were experienced roughly equally by practices making large changes and

those making small changes in care delivery, as measured by the change in their M-PCMH-A score. This shift in the association led to the disappearance of a relationship between M-PCMH-A change and reductions in hospitalizations.

- Given the financial incentives of hospitals, practices that are owned by hospitals or health systems might be expected to show relatively little reduction in use of hospital services despite any improvements in M-PCMH-A scores. Practices that are owned by physicians face no such adverse incentives to reducing their patients' use of hospital service. We do find a difference in results between physician- and hospital- or system-owned practices, but not in the expected direction. We find very little association between score increases on individual M-PCMH-A items and hospital utilization measures for physician-owned practices, but find twice as many such outcomes with statistically significant associations for the hospital- or system-owned practices. However, half of the statistically significant associations for hospital/system-owned practices are positive—service usage *increases* with score increases and the other half are negative—utilization of hospital services *decreases* as scores improve. The number of total CPC practices of adequate size for this analysis (359) may be too small to reliably estimate this potential difference between physician- and hospital/system-owned practices.

2. Whereas 2014 results showed that, for 15 of the 37 items comprising the M-PCMH-A, improvements were significantly associated with reduced hospitalizations at the 5 percent level, in the 2015 results, only 2 items had a significant favorable relationship, about what one would expect by chance.
3. Of six other outcomes examined (Medicare expenditures, emergency department outpatient visits, total hospital outpatient expenditures,[77] observation stays, primary care visits, specialist visits), only observation stays had improvements in the M-PCMH-A overall score associated with reductions in utilization.
    - **Effects of M-PCMH-A domains.** Improvements in three of the seven M-PCMH-A domains were significantly associated with reductions in observation stays; none of the other associations between the domains and outcomes was statistically significant.
    - **Effects of individual M-PCMH-A items.** Improvements in 5 of the 37 individual M-PCMH-A items were significantly associated with reductions in emergency department (ED) outpatient visits; improvements in 4 of the items were associated with reductions in observation stays. Changes in few or none of the 37 items were associated with reductions in any of the other service use and expenditure outcomes we examined.
4. Use of indices (scores) created from the individual M-PCMH-A items may obscure some relationships between changes in care delivery and outcomes. Different M-PCMH-A items within a domain sometimes appear to influence a given outcome in different directions.

[77] Outpatient expenditures include all Medicare fee-for-service (FFS) expenditures for all ED visits, observation stays, and hospital outpatient department services.

5. Additional conceptual and empirical work is needed to determine which M-PCMH-A items, if any, show score improvements that are consistently associated with reductions in different types of services and costs. Additional work is also needed on how the relationships vary with baseline levels of the outcome and the M-PCMH-A score, as well as with other practice characteristics, and possibly, with patient characteristics. Finally, we will study whether other sources of data on practice transformation, such as the clinician and staff survey data, yield different results.

Although important in their own right, these results should not be interpreted as representing the relationship between outcomes and achieving CPC Milestones. The M-PCMH-A domains are similar to CPC Milestone definitions but do not completely align with them.

8.2 Objectives

The purpose of this analysis is to address the critical question concerning the extent to which particular improvements in care delivery lead to reductions in patients' use of services and expenditures. Ideally, this analysis will allow us to learn from the CPC initiative about the relative importance of different levels and changes in care delivery for achieving these outcomes, regardless of the overall effects of CPC on service use and Medicare expenditures. Here, we extend the analyses from the second annual report, which showed statistically significant correlations between improvements in care and reductions in hospitalizations between baseline and the second program year of CPC (Peikes et al. 2016), extending the data to CPC's third year and examining links to a broader set of outcomes. We first describe the methods used, then present the results, implications, and next steps to better understand the relationships between practice changes and improvements in key outcomes.

8.3 Methods

We use bivariate regressions to estimate the association between improvements in practices' self-reported approaches to various aspects of care delivery and changes in Medicare expenditures and service utilization rates. Although multivariate models would allow us to estimate the marginal effects of the different measures and control for other factors, a high degree of collinearity among the measures limits the ability of simple regression models to achieve credible estimates of such effects.

Practice sample. For this analysis (as in last year's report), we examined three-quarters of CPC practices (N = 359). 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 harder to determine true links between delivery approaches and outcomes. This method resulted in the exclusion of all practices with fewer than 330 attributed Medicare FFS beneficiaries in 2014 (the initiative's second year, N = 362). We continue with this same sample of practices in this 2015 analysis but drop three practices that lack data for this period (due to closure or merger), bringing the practice sample to 359.

Data. We analyzed data from several sources:

- We used Medicare FFS claims data to construct, for each CPC practice, the percentage change in outcomes between the year before the start of the initiative and the third year of CPC.
- We used several data sources, including the Medicare Enrollment Database; CMS hierarchical condition category scores; the Area Resource File; and data from SK&A, the National Committee for Quality Assurance, and Health Resources and Services Administration to construct baseline practice and practice-level patient characteristics used to risk adjust practices' percentage change in hospitalization rates.
- We used the modified version of the M-PCMH-A module of the CPC practice survey fielded in October–December 2012 (baseline), April–July 2014, and April–August 2015 to capture the practices' self-reported approaches to primary care delivery in 37 items. We aggregated these items into seven domain scores and a total overall score, based on a factor analysis of the 2012 data.

Outcome measures. We examined the regression-adjusted percentage change from the year before CPC to the third year of CPC in each of the following outcome measures:

- Medicare expenditures (average monthly per beneficiary), excluding CPC fees
- Hospitalizations per 1,000 beneficiaries per year
- ED outpatient visits per 1,000 beneficiaries per year
- Outpatient ED visits that end in hospital observation stays per 1,000 beneficiaries per year (a subset of outpatient ED visits)
- Medicare expenditures for all hospital outpatient services per beneficiary per month
- Primary care visits per 1,000 beneficiaries (in any setting) per year
- Specialist visits per 1,000 beneficiaries (in any setting) per year

As with the second annual report, we first risk-adjusted the outcome variables for several market and practice-level patient-related characteristics[78] to distinguish the effect on outcomes due to practice transformation from the effects due to changes in these market and patient characteristics.

[78] To control for factors that might affect a practice's ability to reduce service use and expenditures apart from any increases in their M-PCMH-A measures, we regression-adjusted the percentage change in all outcomes between the year before CPC began (baseline) and CPC 2015 for four 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]).

Explanatory variables. The data on the practices' self-reported approaches to delivering primary care and transformation in these approaches come from the modified M-PCMH-A module in the practice survey:

- Thirty-seven modified M-PCMH-A item scores included in each round of the survey
- Seven modified M-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 M-PCMH-A score constructed from the factor analysis

We measured each item 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 G, Table G.1 for a list of the M-PCMH-A items by domain. In the regression analysis, we treat the M-PCMH-A scores as continuous interval-scale variables, although we constructed them from survey questions that presented a choice of three ordinal responses within each of four ordered categories for each M-PCMH-A item.

As we note in Chapter 5, the M-PCMH-A domains listed above are similar to CPC Milestone definitions but do not completely align with them. For example, the Milestone definition of risk-stratified care management is much broader than the definition of the risk-stratified care management domain in the M-PCMH-A module. This Milestone definition corresponds to the four items from the risk-stratified care management domain, and nine items from other M-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 conducted regularly). Similar partial overlaps exist between the M-PCMH-A domains and other CPC Milestones. Thus, these results should not be interpreted as representing the relationship between outcomes and achieving CPC Milestones.

Estimation methods. For this analysis, many of the variables that might affect outcomes are highly correlated, limiting our ability to account for their separate influence in a regression. Examples include the individual practice transformation, especially within domain. Domain score increases were highly correlated, and baseline levels of M-PCMH-A items and domains were highly correlated with the changes observed. That is, practices that had large increases in one domain tended to have large increases in other domains, and those with low baseline values tended to have the largest increases. In these situations, estimated regression coefficients on the

correlated variables tend to have very large variances, making it difficult to find statistically significant estimates.[79] Furthermore, controlling for a characteristic that is strongly associated with changes in care delivery could mask important effects unless interaction terms are added, but there are too few practices to include many such interactions. We therefore relied primarily on simple regressions (that is, correlations) to assess the relationships between care delivery changes and outcome improvements without regard to other factors. However, we also did some exploratory descriptive and regression analyses using a limited number of explanatory factors—including practice characteristics such as size, ownership classification, and region—that we felt may be critical intervening factors. We also explored analysis with patient-level data (results not shown), adjusted for clustering in practices, and controlled for a range of characteristics. However, these approaches did not lead to different conclusions, nor did they solve the problem of a limited number of degrees of freedom in the key explanatory variables for this analysis (the changes in care delivery measures), which are measured at the practice level. Thus, we believe the results presented here provide the best representation of the relationships under investigation.

8.4. Results

8.4.1. Relationship of M-PCMH-A improvements to hospitalization changed with 2015 data

The sizable and statistically significant reductions in hospitalizations associated with improvements in the overall M-PCMH-A score from baseline to 2014 are no longer present when we examine the changes from baseline to 2015 in these measures (see Table 8.1). We first replicated the previous model to reproduce the results with 2014 data (without the three practices that were unavailable for the 2015 analysis), then re-estimated the relationship using 2015 data. The results in the top row of Table 8.1 show that, in the analysis for 2014 (Year 2), practices making no change in their M-PCMH-A score had an average decrease of 2.7 percent in their hospitalization rate, and for every one-point improvement in their overall M-PCMH-A score, the hospitalization rate declined by an additional 1.15 percentage points. Thus, a practice with an average change (an increase of 2.3 points) in its M-PCMH-A score had an average reduction in their hospitalization rate of an additional 2.6 percentage points, for a total reduction of 5.3 percent compared with baseline.

The results for 2015 change markedly relative to 2014. As the last column of Table 8.1 shows, practices making no improvements in M-PCMH-A score reduced hospitalization rates by a higher percentage (3.6) in 2015 than was observed for 2014, but the association with improvements in M-PCMH-A score from baseline to 2015 essentially fell to zero.

[79] In many cases, including such variables in a single regression led to negative adjusted R-squared statistics, suggesting that collinearity swamps the ability of the regression equation to produce reliable coefficients and standard errors.

Table 8.1. Practice-level regressions of risk-adjusted percentage change in hospitalization rate on change in overall M-PCMH-A score for 2014 and 2015

Predicted percentage change in risk-adjusted annualized hospitalization rate per 1,000 attributed Medicare beneficiaries		
	Regression coefficient (*p*-value)	
Change in overall M-PCMH-A score between baseline and 2015	**Percentage change in annual hospitalization rate between baseline and 2014**	**Percentage change in annual hospitalization rate between baseline and 2015**
If practice made no improvement in overall M-PCMH-A score (intercept)	-2.68 (< 0.001)***	-3.61 (< 0.001)***
If practice increased overall M-PCMH-A score by one point (coefficient on score change)	-1.15 (0.02)**	-0.32 (0.55)

Note: *p*-value in parentheses; ** significant at $p < 0.05$; *** significant at $p < 0.01$.

To explain this change in results, we ran several additional regressions. We first substituted the change in M-PCMH-A score from baseline to 2014 in the regression on the percentage change in hospitalization rate from baseline to 2015. The results (not shown) were very similar to the results using the three-year change in the M-PCMH-A score; this finding is consistent with the fact that overall M-PCMH-A scores (as well as individual items) did not change much between 2014 and 2015. Inspection of the practice level means showed that the hospitalization rates for many practices were quite different in 2015 than in 2014, even though the overall average rate is quite similar, leading to the disappearance of a relationship between M-PCMH-A change and reductions in hospitalizations.

To further explore reasons for the change in results, we also controlled for whether the practice was owned by a hospital, health system, or university (not shown). Such practices have different incentives than clinician-owned practices, as hospital revenue depends on inpatient admissions and use of hospital outpatient services, and owners' responses to these incentives may change over time. However, we find no change in the 2014 or 2015 estimated relationships when we control for hospital ownership type.

We also investigated several other possible explanations for the difference between the 2014 and 2015 estimated relationships between M-PCMH-A change and hospital rate changes. All analyses confirmed that the relationship had changed; none could account for the difference.

- We introduced additional practice characteristics as control variables; all variants showed the same observed difference between 2014 and 2015 in the estimated relationship of M-PCMH-A score changes with hospitalization rate changes.
- To ensure that changes in the use of observation stays were not affecting the result, we constructed a broader measure of hospitalization, creating a "hospital contact" variable that included inpatient, ED (including observation stays), and other outpatient services that was independent of whether the hospital contact resulted in an admission. This process did not alter the basic result.

- We weighted observations in the regressions by each practice's number of Medicare patients to give more weight to practices whose estimated mean outcomes had smaller variances and to reflect the number of beneficiaries affected by the changes in care delivery; the difference persisted.

A few alternatives we tested using the 2014 data, while not explaining why the observed link between transformation and reductions in hospitalizations in 2014 disappeared in 2015, did reveal some new information concerning this link in 2014:

- We investigated the possibility that increases in the M-PCMH-A score had a weaker relationship with reduced hospitalizations for practices that started out (at baseline) with a relatively high score, by controlling for the baseline score in our regressions and adding an interaction term. We found that a one-point increase in the M-PCMH-A score for practices with a higher baseline score produced a smaller reduction in hospitalizations, but these results were not statistically significant, due in part to collinearity between the baseline score and score change. Creating four independent cells defined by the combination of high or low baseline score and high or low change relative to that score showed much larger average decreases in hospitalization rates for the two cells containing practices with low baseline scores (8.4 for large changers and 6.7 percent for small changers), than for those with higher baseline scores (2.2 and 3.8 percent, respectively, for those making large versus small changes).

- We grouped practices into four cells defined by whether they had high or low baseline hospitalization rates and whether they had a large or small change in their overall M-PCMH-A scores *relative to* their baseline score, and compared the mean hospitalization rates of the four cells. ("Large" changes were those with an increase of more than 1.5 points for practices with baseline scores above 7, or an increase of more than 3.5 points for practices with a baseline score below 7. This approach gets around the problem of collinearity between baseline score and the change in score.) Practices with high hospitalization rates at baseline had greater reductions in hospitalization rates than those with low baseline rates. However, we find this relationship regardless of whether the practice had a high or low improvement in its M-PCMH-A score (relative to its baseline value). Thus, it may be more of an indicator of regression toward the mean than of an association between score change and hospitalizations, but it does not explain the strong link between score change and hospitalizations observed in the 2014 data.

- Taken together, these two sets of results suggest that the greatest reductions in hospitalization rates occurred in practices with low M-PCMH-A scores at baseline and high baseline hospitalization rates, with the actual size of the score increase being less important.

8.4.2. Effects of score changes on other outcome measures

Although we do not find a significant relationship between the M-PCMH-A score changes and reductions in hospitalizations between baseline and 2015, it is possible that the observed improvements in care delivery have affected other service use measures, and/or total Medicare expenditures. This effect could occur because the incentives to control service utilization and the degree of influence that practices believe they have over their patients' service use vary with the

type of service. Thus, we examined the effects of changes in each of the seven domain scores, and in the overall M-PCMH-A score, on changes in the means of the following outcomes for practices' attributed Medicare FFS beneficiaries, from baseline to 2015: total Medicare expenditures, observation stays, ED outpatient visits, Medicare expenditures for hospital outpatient services, specialist visits, and primary care visits. We also examined the relationship between changes in the 37 individual items and changes in each of these outcomes.

We find only three statistically significant relationships (at the 5 percent level) between the change in the independent variables we examined (the seven domain scores and the overall score) and the change in any of these six additional outcome measures. All three of the significant relationships are associated with reductions in service utilization—none with increases in utilization (see Table 8.2). This pattern is only slightly more likely than what we would expect to occur by chance (one statistically significant relationship in each direction). The statistically significant associations are confined to one of the seven outcomes—observation stays.

- The change in the total M-PCMH-A score was not statistically significantly associated with a change in any of the outcome measures.
- Reductions in observation stays were strongly associated with changes in three domains—continuity of care, access to care, and planned care for chronic conditions. Our bivariate regressions suggest that a one-point improvement in these domains will reduce the average number of observation stays for a practice's attributed patients by 5.9, 7.8 and 6.8 percent, respectively.

Table 8.2. Percentage change in outcomes associated with a one-point change in M-PCMH-A score between baseline (2012) and 2015

M-PCMH-A domain	Medicare Expenditures	Hospitalizations	Observation stays	ED outpatient visits	Outpatient expenditures	Physician primary care visits	Specialist visits
Total M-PCMH-A score	0.3%	-0.3%	-5.4%	-0.7%	0.2	-0.2%	0.0%
Continuity of care	-0.2%	0.4%	-5.9%	0.3%	-0.1%	-0.5%	0.0%
Access to care	0.2%	-0.1%	-7.8%	-0.8%	-0.9%	0.3%	0.0%
Planned care for chronic conditions and preventive care	0.3%	-0.3%	-6.8%	-0.6%	-0.3%	-0.1%	0.0%
Risk-stratified care management	0.3%	0.2%	-1.6%	0.0%	-0.3%	-0.1%	0.2%
Patient and caregiver engagement	-0.1%	-0.6%	-2.9%	-0.4%	0.7%	-0.5%	-0.3%
Coordination of care across the medical neighborhood	0.2%	-0.5%	4.8%	0.1%	0.3%	-0.2%	-0.1%
Continuous improvement driven by data	0.1%	-0.1%	-3.2%	-0.9%	0.2%	0.0%	0.0%

Note: Shaded boxes denote estimate is significantly different from zero at the 0.05 level for a two-tailed test.

To investigate whether items within the domains differed in their relationship to service utilization changes, we examined them each separately, using a series of simple (bivariate) regressions to avoid the high degree of collinearity between changes in the individual items (see Appendix G, Table G.2). We find few statistically significant associations of score change for a given M-PCMH-A item with any of the outcome measures:

- We find 15 statistically significant associations between individual M-PCMH-A measures and the 7 outcomes at the 0.05 level. For 12 of these, increases in score are associated with a reduction in utilization; for only 3 is an increase significantly associated with an increase in utilization. We would expect to observe about 6 or 7 statistically significant associations by chance, in each direction, among the 259 bivariate tests (7 outcomes * 37 M-PCMH-A items).
- The outcomes for which we observe the most M-PCMH-A items with statistically significant associations between score changes and outcome improvements are ED outpatient visits (five items) and observation stays (four items). No items were significantly associated with reductions in Medicare expenditures, and only two items were associated with reductions in hospitalizations.
- The significant associations were scattered across the 37 items, with these items falling into four of the seven domains. Two M-PCMH-A items were each significantly associated with reductions in two of the seven outcome measures; another seven items were each associated with reductions in only one outcome measure. The items for which score increases were associated with reductions in two of the seven outcomes include the following (domains appear in parentheses):
  - Flexibility of appointment systems for different length and same-day visits (access to care)
  - How test results and care plans are communicated to patients (patient/caregiver engagement)

We also examined the relationships separately for practices that were owned by hospitals or health care systems (not shown). Of the 259 correlations examined (7 outcomes *37 M-PCMH-A items), we found that 13 were statistically significant and positive, and 13 were significant and negative—about twice the number that we would expect to see by chance—for the hospital/system-owned practices. For the physician-owned practices, we found fewer relationships that were statistically significant (nine indicating a reduction in the outcome, and six indicating an increase in the outcome), about what would be expected by chance. Furthermore, for the four services types examined that are delivered in a hospital, the hospital/system-owned practices had equal numbers of positive and negative associations with score improvements, but the physician-owned practices have five estimates associated with reductions in utilization and only one associated with an increase in utilization.. Thus, these results support the hypothesis that the relationships between changes in care delivery and changes in outcomes differ systematically with the type of practice ownership.

8.4.3. Limitations of this analysis

Our analysis has several limitations. First, these results are not based on an experimental or quasi-experimental design. Rather, it is a "dose-response" type of analysis, to identify associations between the extent of improvements in care delivery and improvements in the outcome. Because practices that change more may be different from those that change less, in ways that are correlated with both M-PCMH-A score change and with reductions in service utilization rates, the estimated associations may be due to (or confounded by) these other differences rather than to the M-PCMH-A improvement. Second, 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 utilization and are outside of the practices' control. Third, we are uncertain of exactly when practices' changes in approaches to care measured by the M-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 outcomes. Fourth, it is possible that changes in care delivery lead to decreases in utilization for some patients or practices but to increases in the same outcome for others, which can result in no overall association on the average across all practices and patients. The modest number of practices available for the analysis limits our ability to sort out such possible differences in relationships in our modeling. Fifth, the M-PCMH-A components are self-reported by the practices, so although they have no financial incentive to misreport, they may overstate their survey responses at follow-up. Even if there were no systematic relationship between the extent of over-reporting and the magnitude of outcome changes among CPC practices, this type of measurement error could attenuate the estimated relationships. Finally, even with the smallest practices excluded, the outcomes show substantial variability over time due to the volatility of utilization and the modest number of attributed beneficiaries in many of the practices. Thus, the estimates are not very precise, and the high degree of correlation among M-PCMH-A items makes it difficult to isolate the effect of any single item on any given outcome. However, none of these limitations explains the reason for the marked change in results from 2014 to 2015, and in fact, are not consistent with the strong relationship observed from baseline to 2014.

8.5. Discussion

These results show that, although CPC practices are clearly making progress in transforming care delivery, that progress is not closely related to reduced use of services or lower Medicare expenditures. Early evidence of reduced hospitalizations among those practices making the largest improvements in M-PCMH-A measures has dissipated in CPC's third year. Over this longer period, we observed improvements in some approaches to care delivery measured in the M-PCMH-A being significantly associated with changes (mostly reductions) in hospital outpatient services, such as ED outpatient visits and observation stays. However, the number of significant findings was quite modest in Year 3 of CPC, given the large number of associations examined, and only a handful of the estimated associations between improvements in summary measures of domains of care delivery and improvements in the seven outcomes examined were statistically significant (5 of 56).

The incentives for and ability of practices to change care delivery in ways that reduce their patients' use of expensive services may be limited. CPC (relative to some other payment and delivery models) does not provide strong, direct incentives for lower service use and Medicare savings or tools for practices to influence other providers such as specialists and hospitals. That is, shared savings are distributed to practices in a given region only if CPC is found to have Medicare expenditures that are lower than the benchmark, on average, across *all* CPC patients in the region. Furthermore, the share of any savings received by a practice is determined only by the number of patients attributed to the practice, not by whether expenditures declined for the practice's own patients. In addition, CPC practices have little or no control over the behavior of specialists or hospitals, and little information about which specialists tend to practice more conservatively. Finally, some of the changes made in how care is delivered could actually increase service use, by increasing access to care and diagnostic screening. Although such practice changes may focus on achieving other beneficial effects, such as improvements in quality of care or patients' experience with care (which may, in turn, result in reductions in some service use or Medicare expenditures at some point), no such linkages to service reductions are observed in the 2015 results. We have not tested in this analysis for effects of score changes on the quality of care delivered.

Understanding practice transformation effects will require development of conceptual models and more extensive quantitative and qualitative analysis. A fuller understanding of whether and what types of practice transformation are most likely to improve outcomes, and in what situation, will require more nuanced analysis, and less reliance on aggregate scores such as the ones we constructed. This investigation will require exploration with different types of CPC practices about the changes they are focused on making in how they deliver care, and which changes they expect to influence different outcomes (and in which direction).

The reason for the change in results between 2014 and 2015 remains unclear. Despite our efforts to explain the very different findings from the two years, we were unable to identify any clear causal factors. Perhaps the results in 2014 were due to chance or some other correlate, rather than a true effect of practice change on hospitalizations. However, that reasoning seems unlikely, given the number of individual items for which improvements were significantly and strongly associated with reductions in hospitalizations. Perhaps those practices making smaller changes experienced the same improvements in hospitalizations as those making larger changes, but only after an additional year of experience. Or perhaps the earlier findings that reductions in hospitalizations were strongly linked to practices with higher baseline rates suggest that those practices made larger changes in their M-PCMH-A scores but were unable to sustain the intensity of these changes. This factor could lead to their hospitalization rates rising somewhat, while other practices that made more modest changes may have been able to increase the intensity of their effort. It is also possible that practices have changed their standards in self-rating over time, so practices making more recent improvements are not "crediting" themselves for these changes as aggressively as the practices that had made large improvements by 2014. More work is needed to explore the reasons for the change in findings, and the outcome is extremely important for ongoing efforts to reduce unnecessary service use and costs through improvements in primary care delivery.

8.6 Further investigation of the relationship between practice transformation items and outcome changes

These results leave unresolved questions and suggest areas for further investigation. Here, we identify the next steps in our efforts to shed light on the relationship between changes in how practices deliver care and improvements in cost and service utilization outcomes that CPC was intended to influence. These steps include both conceptual and empirical work.

Task 1: Develop a more comprehensive conceptual model of the relationship between practice transformation and outcomes. Our initial approach to synthesizing the effects of the wealth of M-PCMH-A measures has been to create scores for seven domains and an overall score of care delivery, and to estimate relationships between changes in these scores and changes in outcomes. Although this approach yielded meaningful results using baseline to Year 2 changes in outcomes, it no longer did so using baseline to Year 3 changes. Thus, it has become clear that more in-depth conceptual framing is needed about how different measures of care delivery processes, such as those captured in the M-PCMH-A, are expected to influence different outcomes. Conversely, we will develop models working backward, identifying for each core outcome the types of changes in care delivery that are most likely to improve these outcomes. For example, we will consider for hospital-based services what changes in care delivery (and other factors, such as practice culture and leadership, or experience with incentives to reduce costs) might increase or reduce use, and then test for whether our data support those hypothesized relationships.

We will develop our conceptual model based on discussions with our deep dive practices, and may add site visits or phone interviews with a small number of other practices that have larger sustained decreases in key outcomes than might be expected (using the average over multiple baseline and follow-up years to reduce the extent of random variation). We will explore with these exemplar practices both the incentives and the opportunities they perceive to transform care in ways that might reduce unnecessary or avoidable use of expensive services. We will investigate whether they chose to focus on certain improvement areas because they felt they could reduce utilization and costs in those areas, or whether they focused almost entirely on ways to improve the quality of care and patient experience. We will also ask the practices to identify the factors that they feel contributed to or impeded their ability to achieve these gains. This qualitative interview information can help us understand the causal links that may be underlying the observed correlations, and will help us to formulate more realistic models to estimate these linkages. We will also explore whether practices owned by hospitals or large health systems tend to have different goals for their improvement efforts, and focus on different types of care delivery improvements, and whether these goals and foci have changed during CPC.

Task 2: Refine our empirical analysis to reflect more complex relationships and what we learn from practices about what drives the care delivery changes they make. We will continue to refine our statistical models that link practice improvements to outcome changes. This modeling will account for the fact that reductions in use of expensive services are easier to accomplish in practices that have high utilization rates and costs at baseline. Although we have investigated this finding to a limited degree, a more nuanced model may be needed to account for this relationship. Furthermore, we will build models that allow the effect of a given increase

in the M-PCMH-A measure to depend on the baseline value—the effect of an increase of 2 points between baseline and follow-up on a 12-point scale for a practice with a baseline value of 3 may have different effects on service utilization changes than a similar magnitude of improvement for a practice with a baseline value of 10. We will use multiple years of outcome data in a single model to increase the precision of our estimates, and will explore the value of using patient-level rather than practice-level data in our models to refine the risk adjustment of outcome changes. Other changes will include adapting the model to reflect expected differences in how different outcomes are likely to be influenced by a given M-PCMH-A change, and further modeling of how hospital/system ownership and other practice characteristics may alter the relationship between M-PCMH-A change and some outcomes. We will use Bayesian models to sharpen some of these estimates, in addition to more conventional regression models, to assess the robustness of our results.

We will also examine effects of changes in care delivery on quality of care including patient experience measures. It may well be the case that quality of care is improved by practice transformation, even if service utilization and expenditures are not reduced in the time period covered by our analyses. We will draw these quality measures from claims and from patient and clinician surveys.

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