Supplemental Appendix

CPC+ selection of regions and payers

The Centers for Medicare & Medicaid Services (CMS) selected regions and payers through a solicitation process in which potential regions were assessed for payer alignment and market density, to ensure that practices would have sufficient multipayer support to promote practice change.[1] Potential payer partners were expected to align their payment approach with the three elements of CMS' Comprehensive Primary Care Plus (CPC+) payments to achieve multipayer payment reform and care delivery transformation. If selected, payers committed to providing three enhanced and alternative financial supports to participating primary care practices: (1) non-visit-based financial support; (2) incentive payments based on performance, utilization, cost of care, and/or quality of care; and (3) an alternative to visit-based reimbursement for Track 2 practices.

CMS invited potential payers to respond to a solicitation to partner in CPC+ from April 15 to June 8, 2016, for payers joining in 2017; it hoped to partner with payers in the 7 existing CPC Classic regions as well as in up to 13 new regions. CMS was prepared to add up to 10 new regions to CPC+ in 2018 and accepted solicitations from payers from May 18 to July 13, 2017.

For payers that responded to the solicitations released in 2017 or 2018, CMS conducted initial vetting, mapped interested payers into potential regions, and assessed expected market share among interested payers in each region to ensure sufficient market penetration to engage in CPC+. Within these preliminary regions, review panels that included experts from across the Department of Health and Human Services for payers joining in 2017—and included staff from the Center for Medicare & Medicaid Innovation for payers joining in 2018—then evaluated and scored payers' proposals to assess whether payers' goals and approaches aligned sufficiently with CMS' goals and approaches for CPC+. CMS selected 14 regions to begin CPC+ in 2017 and 4 to begin in 2018 (see Supplemental Figure 1).

CPC+ eligibility criteria

From the applicants in the selected regions, CMS used the following criteria to select 2,905 practices to begin in 2017 and 165 practices to begin in 2018:[2]

- Primary care had to represent 40% or more of Medicare fee-for-service (FFS) services provided by the primary care practitioners at the practice, to ensure the practice was providing primary care.

- The practice had to report that its revenue from Medicare and the other participating CPC+ payer partners was at least 45% or more of its total revenue and had to serve a minimum of 125 Medicare FFS beneficiaries, to ensure robust enhanced payment.

- The practice had to be a user of certified health information technology and electronic health record (EHR) technology to support advanced care delivery approaches.

- The practice could not be a concierge practice, rural health clinic, or federally qualified health center; participate in any Medicare Accountable Care Organization (ACO) other than the Medicare Shared Savings Program (SSP) ACO; or participate in the Transforming Clinical Practices Initiative learning activities, when CPC+ began.

- The practice had to meet certain care delivery criteria when it applied. CPC+ includes two primary care practice tracks (known as Track 1 and Track 2); Track 2 has more advanced care delivery requirements, more financial support, and more of a shift from FFS toward population-based payment than Track 1. To qualify for either track, a practice had to assign patients to a provider panel, provide 24/7 access for patients, have non-physician team members deliver some clinical care, and support quality improvement activities. Track 2 practices also needed to use a risk-stratification tool, develop and record care plans, consistently follow up with patients after an emergency department (ED) or hospital discharge, and systematically link patients to community-based resources.

CPC+ enhanced payment supports

To support transformation, CPC+ provides practices with enhanced and alternative payments, data feedback on performance at least quarterly, and a learning community.[2] CMS provides three types of enhanced payments for Medicare FFS beneficiaries:

1. CMS pays risk-adjusted care management fees that average $15 per beneficiary per month (PBPM) for Track 1 and $28 PBPM for Track 2 in addition to usual Medicare FFS payments.
2. Practices that do not participate in a Medicare SSP ACO are also eligible for performance-based incentive payments of up to $2.50 PBPM for Track 1 and $4 PBPM for Track 2.
3. CMS pays Track 2 practices a hybrid payment that includes a prospectively paid payment—called the CPCP—with a corresponding reduction in FFS payments for selected evaluation and management (E&M) services. The CPCP is based on a practice's average E&M payments during a historical period. CMS then increases this amount by 10% to account for the greater focus on comprehensiveness of medical care and social services expected under Track 2 (called the comprehensiveness supplement) and further adjusts it to reflect any updates to the Physician Fee Schedule.

Other payers participating in CPC+ committed to providing enhanced and alternative payments that align with Medicare's approach. To provide some context for the possible value of the enhanced payments, in a prior initiative called Comprehensive Primary Care (CPC Classic), Medicare paid $20 PBPM during the first two years and $15 PBPM during the last two years. In the last year of CPC Classic, across all payers, the median enhanced funding was $179,519 per
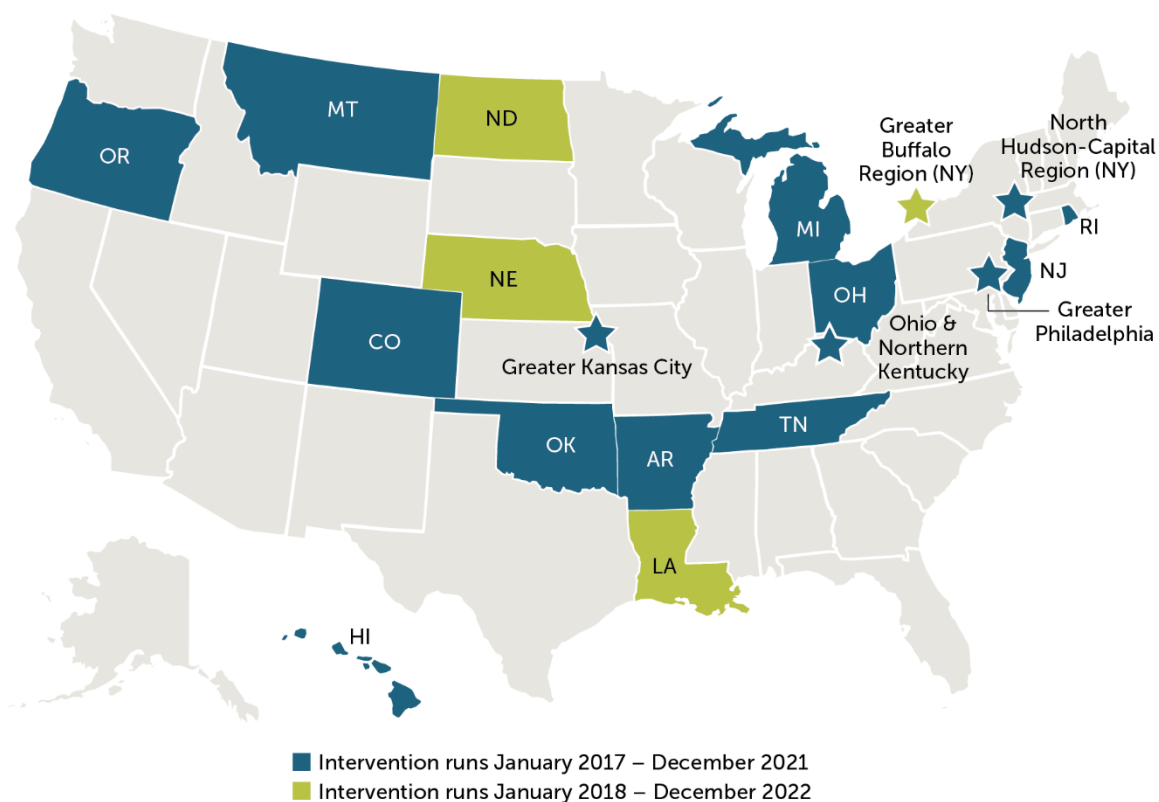
practice, which translated to $50,189 per clinician, or 10% of practice revenue that year, in addition to traditional FFS payments.[3]

Supplemental Figure 1. CPC+ participating regions

This study focuses on all regions that began CPC+ in either 2017 or 2018.

■ Intervention runs January 2017 – December 2021
■ Intervention runs January 2018 – December 2022

Details on the construction of the data set

Identify primary care practices in the United States. To develop a frame of primary care practices, we used the SK&A office-based physician database. We obtained the SK&A data from IQVIA, a commercial health care data vendor that maintained and verified lists of practitioners working in practices throughout the country. We purchased the data once in 2016 (for practices in 2017 CPC+ regions) and again in 2017 (for practices in 2018 CPC+ regions). The data we received included all practices in the United States with at least one practitioner (defined as a physician, nurse practitioner, or physician assistant) with a primary care specialty (defined as family practice, general practice, geriatrician, or internist.). The data included practices' names

and addresses; the name, specialty, and National Provider Identifier (NPI) of each practitioner at the practice site; and several characteristics of the practice.

We then identified CPC+ practices (both applicants and participants) using a list provided by CMS within the roster of SK&A practices. We did so by matching on practice name and/or practice address and on NPIs listed in CPC+ application data (we did not require all information to match). We were able to link approximately 95% of all CPC+ practices to a practice in the SK&A data. We appended the remaining CPC+ practices using CPC+ application data to ensure we had a full sample of CPC+ practices. These data included information similar to that available in the SK&A file, including practice name, practice characteristics, and providers affiliated with that practice.

Next, we augmented the provider-level SK&A data with information on practitioner specialties and NPIs by linking the practitioner-level SK&A data to the National Plan and Provider Enumeration System.

Finally, we manually reviewed all practices, removing practices that appeared to be specialty clinics (for example, surgery clinics, Planned Parenthood clinics, or urgent/emergency care clinics). Furthermore, using SK&A's measure for practice specialty, we removed non-CPC+ practices with a specialty other than primary care, limiting the frame to the following eight specialties: (1) adolescent medicine, (2) family medicine, (3) geriatric medicine, (4) general practice, (5) internal medicine/pediatrics, (6) internal medicine, (7) multispecialty, and (8) pediatrics.

For this study, we limited data to primary care practices in the 18 CPC+ regions. To define a unique primary care practice, we used SK&A's definition of a practice site (a practice and its providers that share a unique practice ID). We allowed providers to be on the roster of more than one practice at a time.

Assemble secondary data and construct characteristics of the primary care practices. We developed variables for primary care defined before the start of CPC+ (January 1, 2017, for practices in the fourteen 2017 starter regions and January 1, 2018, for practices in the four 2018 starter regions). These variables included the following:

- **Characteristics of practices**, including the number of practitioners in the practice, whether the practice was owned by a hospital or a health system, whether practitioners working at the practice had attested to meaningful use of an EHR, and participation in SSP. These characteristics were drawn from the SK&A or application data.

- **Characteristics of the county** in which the practice is located, such as median income; whether the county was a medically underserved area; percentage of the population in poverty; and whether the county was rural, suburban, or urban.

- **Characteristics of Medicare beneficiaries** in each practice, comprising demographic characteristics and health care use along with risk characteristics of all Medicare FFS

beneficiaries attributed to practices prior to the start of CPC+ (based on the practices they most often visited over a 24-month lookback before CPC+ began), including age, race, and ethnicity; hierarchical condition category scores (a measure of risk for subsequent expenditures); number of ED visits and hospitalizations during the baseline period; Medicare spending during the same period; and the number of primary care visits during the same period.

In Supplemental Table 1, we show the characteristics described in this study as well as the data that were used to construct these characteristics. To characterize the number, demographics, and cost and use history of each practice's patients, we used Medicare FFS beneficiaries *attributed* to practices. We describe the attribution process in more detail following the table.

Supplemental Table 1. Variables and data sources

Variable	Data source
Practice characteristics	
Number of clinicians (physicians, NPs, PAs)	SK&A 2016, 2017
Number of clinicians at practice with primary care specialty	SK&A 2016, 2017, NPPES 2016, 2017
Whether practice is owned by either a hospital or health system	SK&A 2016, 2017
Whether practice is participating in SSP accountable care organization	MDM 2016, 2017
Prior experience in selected practice transformation activities: NCQA, TJC, AAAHC, URAC, or state medical-home recognition status (whether practice is in a medical home) or alumnus of CPC Classic or MAPCP and participation in TCPI	NCQA, TJC, AAAHC, URAC, state-specific sources; CPC+ data; CMS 2016, 2017
Meaningful use status (whether physicians at practice had attested to meaningful use of EHRs and earliest year that physician at practice became meaningful user)	CMS 2016, 2017
Characteristics of Medicare beneficiaries attributed to practices at baseline[a]	
Number of attributed Medicare beneficiaries; number of attributed Medicare beneficiaries per primary care practitioner	Medicare claims and enrollment data, 2014–2017
Mean and median annual Medicare expenditures per attributed beneficiary (total Part A and Part B expenditures)	Medicare claims data, 2016–2017
Mean annual Medicare service use per attributed beneficiary (number of acute care stays, ED visits, primary care [ambulatory] visits)	Medicare claims data, 2016–2017
Percentage of eligible discharges followed by a 14-day follow-up visit	Medicare claims and enrollment data, 2015–2017
Distribution of Medicare risk scores (HCC)	2015, 2016 risk scores computed from Medicare claims and enrollment data
Demographic mix of attributed patients (percentage of practice in age, race, and gender categories)	Medicare enrollment data, 2014–2016
Percentage of practice's attributed patients dually eligible for Medicaid	Medicare enrollment data, 2015, 2016
Percentage of practice's attributed Medicare beneficiaries with selected chronic conditions (diabetes, cancer, chronic obstructive pulmonary disease, kidney disease, Alzheimer's, congestive heart failure)	Medicare claims data, 2013–2017
Characteristics of practice's geographic location	
Median household income of county	Area Resource File, 2015–2016, 2016–2017
Whether in an urban, rural, or suburban area	Area Resource File, 2015–2016, 2016–2017

Notes: AAAHC = Accreditation Association for Ambulatory Health Care; CMS = Centers for Medicare & Medicaid Services; ED = emergency department; EHR = electronic health record; HCC = hierarchical condition category; MAPCP = Multi-Payer Advanced Primary Care Practice; MDM = master data management system; NCQA = National Committee for Quality Assurance; NP = nurse practitioner; NPPES = National Plan and Provider Enumeration System; PA = physician assistant; SSP = Medicare Shared Savings Program; TCPI = Transforming Clinical Practice Initiative; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

[a] The baseline year is 2016 for the 2017 starters and 2017 for the 2018 starters.

Attribute beneficiaries to practices. We used Medicare physician and outpatient claims and enrollment data to attribute beneficiaries to a specific primary care practice. Beneficiaries were attributed to the practice that provided the most recent chronic care management service or where they received the largest share (plurality) of their primary care visits during a two-year lookback period (the two-year lookback period for attribution to the first quarter of 2016 is January 2014 through December 2016). Primary care visits are defined following CMS attribution rules for CPC+ and are identified using the Current Procedural Terminology code reported on the claim.[4] To be attributed, at the start of the quarter, a beneficiary also had to be alive, be enrolled in Medicare FFS (Parts A and B), and have Medicare as his or her primary payer. If a patient was attributed to more than one practice in the year, we assigned the beneficiary to the first practice to which he or she was attributed. More details on our attribution methodology can be found in the appendices to the supplemental volume of the first annual report for the evaluation of CPC+.[5]

We attributed Medicare FFS beneficiaries to all primary care practices in the United States using Medicare claims data and unique combinations of tax identification numbers (TINs) and NPIs. Because the SK&A data do not include practice or practitioner TINs, we assigned TINs to each practice using an algorithm that picked the TIN most frequently billed in Medicare claims data for primary care visits by the NPIs at a practice (according to the SK&A roster) for that year.

In some instances, the same NPI and TIN combination occurred at multiple practices identified in the SK&A data. In these cases, which occur when a practitioner works in more than one practice site within a health care system (where the practice sites share the same billing TIN), we could not distinguish which practice provided care for a beneficiary. To reconcile duplicate NPI–TIN combinations prior to attribution, we assigned the NPI to one practice using the following hierarchy of rules: (1) if the duplicate occurred across a CPC+ practice and a comparison practice, the duplicate was assigned to the CPC+ practice; (2) ascending practice size, as measured by number of primary care practitioners (that is, the NPI was assigned to the smaller practice); and (3) random assignment, if the duplicate occurred among practices in the same research group (CPC+ or potential comparison) and of the same size.

In some instances, we were unable to attribute any Medicare beneficiaries to a practice. There are several possible reasons we might not attribute any Medicare beneficiaries to a practice: (1) missing NPIs in the SK&A data, (2) misspecification in TIN assignment, and (3) the practice not seeing Medicare beneficiaries during the attribution time period. To the extent practices were excluded because of missing data or misspecification, and not because they do not have Medicare beneficiaries as part of their patient population, our participation rates might be inflated. In Supplemental Table 2, we show sample sizes and exclusions.

Supplemental materials for:

Singh P, Orzol S, Peikes D, Oh EG, Dale S. Participation in the Comprehensive Primary Care Plus Initiative. *Ann Fam Med*. 2020;18(4):309-317.

Supplemental Table 2. Sample Sizes and Exclusions			
	All practices	**Practices excluded because they had no Medicare FFS attributed beneficiaries**	**Practices in final study sample used for comparisons**
All practices in CPC+ regions	19,809	2,926	16,883
Non-applicants	15,443 (78.0%)	2,906 (99.3%)	12,537 (74.3%)
Applicants	4,366 (22.0%)	20 (0.7%)	4,346 (25.7%)
Participants	3,051 (15.4%)	0 (0%)	3,051 (18.1%)
Participants in Track 1	1,490 (7.5%)	0 (0%)	1,490 (8.8%)
Participants in Track 2	1,561 (7.9%)	0 (0%)	1,561 (9.2%)
Note: We exclude the 233 applicants that couldn't be identified in our data from this table. The percentages in parentheses are calculated out of all practices in CPC+ regions in each column.			

Participation rates varied across the CPC+ regions. Four regions had participation rates of 2%–10%, eight had rates of 11%–20%, and the remaining six regions had participation rates between 20% and 34% (Supplemental Table 3).

Regional variation in participation rates could be driven by a number of factors: variation in payer penetration and expected payment levels (which affect both the total payment practices could expect to receive from participation and, in the case of payer penetration, practice eligibility at the time of application) and the distribution of practice characteristics (for example, a region with more independent practices could be expected to have a lower participation rate).

Supplemental Table 3. Participation rates, by CPC+ region

Region	Number of primary care practices in the region Overall	Percentage of all practices that applied[a] Overall	Percentage of all practices that participated[a]		
			Overall	**Track 1**	**Track 2**
2017 and 2018 starters combined					
All regions	19,809	22	15	8	8
2017 starters					
Greater Kansas City	319	40	34	23	11
North Hudson-Capital Region (NY)	544	34	28	11	17
Arkansas	792	29	23	11	12
Hawaii	457	28	22	9	14
Montana	245	26	22	10	12
Ohio & Northern Kentucky	2,988	25	19	6	12
Colorado	1,144	23	18	8	10
Oregon	859	25	18	8	10
Greater Philadelphia	1,230	21	18	7	11

Michigan	2,812	23	16	9	7
Oklahoma	1,064	21	16	7	9
New Jersey	2,881	21	15	9	6
Rhode Island	305	13	10	3	7
Tennessee	1,896	15	3	2	1
2018 starters					
Greater Buffalo Region (NY)	319	41	24	15	8
North Dakota	166	25	15	10	5
Nebraska	459	12	7	5	1
Louisiana	1,329	7	2	2	0.4

Sources: Mathematica's analysis of data on practice size and ownership from SK&A data.
Notes: Primary care practices include all practices that have at least one practitioner (defined as a physician, nurse practitioner, or physician assistant) with a specialty of primary care (defined as family practice, general practice, geriatrics, or internal medicine). 2018 starters represent 11% of all practices, 7% of applicants, and 5% of participants.
[a] All percentages in each row are calculated out of the total number of primary care practices in each region.

Supplemental Table 4. Practice characteristics for CPC+ participants, by track, before CPC+

Characteristic	Participants (n = 3,051)[a,b]	Track 1 (n = 1,490)	Track 2 (n = 1,561)	p-value
Practice size and ownership at baseline[c]				
Total number of practitioners (any specialty), Median (IQR)	4.0 (2.0, 6.0)	3.0 (2.0, 6.0)	4.0 (2.0, 7.0)	< 0.001
Number of primary care practitioners, Median (IQR)	3.0 (2.0, 6.0)	3.0 (2.0, 5.0)	4.0 (2.0, 6.0)	< 0.001
Percentage of practices that are:				
Large (6+ primary care practitioners), (95% CI)	26.6 (25.0, 28.2)	23.2 (21.1, 25.4)	29.8 (27.5, 32.1)	< 0.001
Medium (3-5 primary care practitioners), (95% CI)	37.1 (35.4, 38.9)	34.4 (32.0, 36.8)	39.7 (37.3, 42.1)	0.003
Small (1-2 primary care practitioners), (95% CI)	36.3 (34.5, 38.0)	42.3 (39.8, 44.8)	30.5 (28.2, 32.8)	< 0.001
Number of attributed Medicare beneficiaries at baseline, Median (IQR)	484 (288, 837)	453 (284, 791)	513 (291, 885)	0.003
Number of attributed Medicare beneficiaries at baseline per PCP, Median (IQR)	159 (107, 232)	170 (114, 251)	148 (100, 213)	< 0.001

Supplemental Table 4. Practice characteristics for CPC+ participants, by track, before CPC+

Characteristic	Participants (n = 3,051)[a,b]	Track 1 (n = 1,490)	Track 2 (n = 1,561)	p-value
Percentage owned by a health system or a hospital[d],(95% CI)	54.0 (52.2, 55.8)	51.5 (48.9, 54.0)	56.4 (54.0, 58.9)	0.006
Percentage owned (or managed) by a health system, (95% CI)	49.3 (47.5, 51.0)	46.5 (44.0, 49.0)	51.9 (49.4, 54.4)	0.003
Percentage owned by a hospital, (95% CI)	27.6 (26.0, 29.2)	26.3 (24.1, 28.5)	28.8 (26.5, 31.0)	0.129
Percentages of practices with selected transformation experience				
Patient-centered medical-home (PCMH) recognition[e], (95% CI)	52.6 (50.8, 54.3)	43.3 (40.8, 45.8)	61.4 (59.0, 63.9)	< 0.001
Participant in a Medicare SSP ACO as of January 1 of the first intervention year, (95% CI)	46.2 (44.5, 48.0)	51.5 (49.0, 54.1)	41.2 (38.7, 43.6)	< 0.001
Participant in CMMI's Transforming Clinical Practices Initiative (TCPI), (95% CI)	10.8 (9.7, 11.9)	10.3 (8.7, 11.8)	11.3 (9.8, 12.9)	0.341
Participant in CMMI's Multi-Payer Advanced Primary Care Program (MAPCP)[f], (95% CI)	6.9 (6.0, 7.7)	5.6 (4.5, 6.8)	8.0 (6.7, 9.4)	0.009
Participant in CPC Classic[g], (95% CI)	14.1 (12.8, 15.3)	4.8 (3.7, 5.9)	22.9 (20.8, 25.0)	< 0.001
Patient-centered medical-home recognition[e], participant in CMMI's Multi-Payer Advanced Primary Care Program[f], or participant in CPC Classic[g], (95% CI)	60.7 (59.0, 62.4)	47.8 (45.2, 50.3)	73.0 (70.8, 75.2)	< 0.001
Primary care transformation experience or TCPI, (95% CI)	65.7 (64.1, 67.4)	53.3 (50.8, 55.8)	77.6 (75.6, 79.7)	< 0.001

Supplemental Table 4. Practice characteristics for CPC+ participants, by track, before CPC+

Characteristic	Participants (n = 3,051)[a,b]	Track 1 (n = 1,490)	Track 2 (n = 1,561)	p-value
Primary care transformation experience or TCPI or SSP as of January 1 of the first intervention year, (95% CI)	84.6 (83.3, 85.9)	81.5 (79.6, 83.5)	87.5 (85.9, 89.1)	< 0.001
Percentages of practices with at least one practitioner attesting to meaningful use of an EHR				
Meaningful EHR use[h], (95% CI)	90.4 (89.3, 91.4)	87.3 (85.6, 89.0)	93.3 (92.0, 94.5)	< 0.001
Characteristics of practices' county				
Household income in the county in which the practice is located ($)[i], median (IQR)	54,089 (46,185, 66,315)	54,208 (45,916, 68,405)	53,519 (47,351, 65,555)	0.553
Percentage in a rural location[j], (95% CI)	8.7 (7.7, 9.7)	9.5 (8.0, 11.0)	7.9 (6.5, 9.2)	0.106
Percentage in a suburban location[j], (95% CI)	15.4 (14.2, 16.7)	18.6 (16.6, 20.6)	12.4 (10.8, 14.1)	< 0.001
Percentage in an urban location[j], (95% CI)	75.9 (74.4, 77.4)	71.9 (69.6, 74.2)	79.7 (77.7, 81.7)	< 0.001

AAAHC = Accreditation Association for Ambulatory Health Care; ACO = accountable care organization; ARF = Area Resource File; CI = confidence interval; CMMI = Center for Medicare and Medicaid Innovation; EHR = electronic health record; FFS = fee for service; IQR = interquartile range; NCQA = National Committee for Quality Assurance; PCP = primary care practitioner; SSP = Shared Savings Program; TJC = The Joint Commission; URAC = Utilization Review Accreditation Commission.

Sources: Mathematica's analysis of data on practice size and ownership from SK&A data; data on the number and characteristics of attributed Medicare beneficiaries from Medicare Enrollment Database and claims data; data on patient-centered medical home recognition from NCQA, TJC, AAAHC, URAC, and state-specific data sources; data on Medicare SSP ACO participation from CMS' Master Data Management data; data on participation in CMMI's Transforming Clinical Practice Initiative, participation in CMMI's Multi-Payer Advanced Primary Care Practice demonstration, and participation in CPC Classic from CMS; data on meaningful use of EHR from CMS' Medicare EHR Incentive Program; county data from the Area Resource File.

Notes: Table presents the unweighted mean value for each characteristic. Primary care practices include all practices that have at least one practitioner (defined as a physician, nurse practitioner, or physician assistant) with a specialty of primary care (defined as family practice, general practice, geriatrics, or internal medicine). 2018 starters represent 11% of all practices, 7% of applicants, and 5% of participants.

[a] 2018 starters make up approximately 5% of the participating CPC+ practices and 5% of attributed beneficiaries.

[b] As of April 1 of the first intervention year.

[c] The baseline year is 2016 for the 2017 starters and 2017 for the 2018 starters.

[d] In the SK&A data, a practice can be both owned (or managed) by a health system and owned by a hospital.

[e] A practice was considered to have medical home recognition if at least one of its primary care practitioners had recognition at some point in 2014–2017 for the 2017 starters and 2015–2018 for the 2018 starters from a state, the AAAHC, TJC, NCQA, or URAC.

[f] We considered a practice to be a Multi-Payer Advanced Primary Care Program participant if it participated in any year from 2011–2014, as determined by a file from CMS.

[g] Participants include all those practices that stayed enrolled in CPC-Classic for at least the first five months.

[h] At least one practitioner attested to meaningful use under the Medicare EHR Incentive Program, from 2011–2015 for 2017 starters and 2011–2016 for 2018 starters.

[i] Reflects 2014 data for the 2017 starters and 2015 data for the 2018 starters.

[j] The urbanicity of a practice's county (rural, urban, suburban) is derived from the 2013 (latest year available) rural-urban continuum codes (https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/documentation/) available in the Area Resource Files for both 2017 and 2018 Starters.

Supplemental Table 5. Characteristics of CPC+ participants, by track, based on the composition of their Medicare FFS beneficiaries, before CPC+

Characteristic	Participants (n = 3,051)[a,b]	Track 1 (n = 1,490)	Track 2 (n = 1,561)	p-value
Characteristics of Medicare FFS beneficiaries attributed to practices at baseline[c]				
Percentage of beneficiaries ages:				
0-49 years, (95% CI)	5.2 (5.1, 5.4)	5.2 (4.9, 5.4)	5.3 (5.1, 5.5)	0.422
50-64 years, (95% CI)	12.0 (11.7, 12.2)	12.0 (11.6, 12.3)	11.9 (11.6, 12.3)	0.842
65-74 years, (95% CI)	46.1 (45.8, 46.4)	45.7 (45.3, 46.1)	46.5 (46.1, 47.0)	0.008
75 to 84 years, (95% CI)	24.9 (24.7, 25.1)	25.2 (24.9, 25.5)	24.6 (24.3, 24.9)	0.003
85+ years, (95% CI)	11.8 (11.6, 12.0)	11.9 (11.6, 12.2)	11.7 (11.3, 12.0)	0.217
Percentage of beneficiaries who are male, (95% CI)	41.7 (41.4, 41.9)	41.4 (41.0, 41.8)	41.9 (41.6, 42.3)	0.065
Percentage of beneficiaries who are				
Black, (95% CI)	6.9 (6.5, 7.4)	6.7 (6.0, 7.3)	7.1 (6.5, 7.8)	0.334
White, (95% CI)	85.8 (85.1, 86.5)	85.9 (84.9, 86.9)	85.7 (84.9, 86.6)	0.823
Other, (95% CI)	7.3 (6.8, 7.8)	7.4 (6.6, 8.2)	7.1 (6.5, 7.8)	0.568
Percentage of beneficiaries who were dually eligible[d], (95% CI)	14.9 (14.4, 15.4)	15.3 (14.6, 16.0)	14.5 (13.9, 15.1)	0.091
Mean HCC score among beneficiaries attributed in the baseline year[e], (95% CI)	1.10 (1.10, 1.11)	1.11 (1.10, 1.12)	1.09 (1.09, 1.10)	0.007
Percentages of beneficiaries with the following chronic conditions as of the baseline year[f]				
Alzheimer's and related dementia, (95% CI)	7.4 (7.2, 7.5)	7.4 (7.2, 7.7)	7.3 (7.1, 7.5)	0.371
Cancer, (95% CI)	7.9 (7.8, 8.0)	8.0 (7.8, 8.1)	7.8 (7.7, 7.9)	0.123
Chronic obstructive pulmonary disease, (95% CI)	10.3 (10.2, 10.5)	10.7 (10.5, 11.0)	10.0 (9.8, 10.2)	< 0.001
Chronic kidney disease, (95% CI)	16.4 (16.2, 16.6)	16.2 (15.9, 16.6)	16.6 (16.3, 16.9)	0.145
Congestive heart failure, (95% CI)	11.0 (10.8, 11.1)	11.3 (11.1, 11.6)	10.7 (10.4, 10.9)	< 0.001
Diabetes, (95% CI)	25.7 (25.4, 26.0)	26.4 (26.0, 26.9)	25.0 (24.6, 25.4)	< 0.001
Medicare FFS expenditures and service use for Medicare FFS beneficiaries attributed to practices at baseline				
Monthly Medicare expenditures per beneficiary ($ per month)[g,h], Median (IQR)	850 (745, 981)	852 (745, 988)	849 (747, 973)	0.485
Weighted monthly Medicare expenditures per beneficiary ($ per month)[g,h], Median (IQR)	849 (757, 964)	848 (756, 968)	852 (759, 962)	0.855

Supplemental Table 5. Characteristics of CPC+ participants, by track, based on the composition of their Medicare FFS beneficiaries, before CPC+

Characteristic	Participants (n = 3,051)[a,b]	Track 1 (n = 1,490)	Track 2 (n = 1,561)	p-value
Acute care stays per 1,000 beneficiaries, annualized, Median (IQR)	276 (231, 331)	274 (231, 333)	278 (232, 330)	0.861
ED visits per 1,000 beneficiaries, annualized, Median (IQR)	465 (366, 598)	459 (363, 598)	469 (370, 598)	0.447
Primary care (ambulatory) visits per 1,000 beneficiaries, annualized, Median (IQR)	4,443 (3,917, 5,087)	4,461 (3,906, 5,140)	4,419 (3,929, 5,025)	0.297
Percentage of discharges where the beneficiary had a 14-day follow-up visit after hospitalization[i], Median (IQR)	69.6 (64.0, 74.5)	69.3 (63.6, 74.4)	69.8 (64.4, 74.6)	0.203

CI = confidence interval; ED = emergency department; FFS = fee for service; HCC = hierarchical condition category; IQR = interquartile range.

Sources: Mathematica's analysis of data on the number, characteristics, and service use and spending of attributed Medicare beneficiaries based on Medicare Enrollment Database and claims data.

Notes: Primary care practices include all practices that have at least one practitioner (defined as a physician, nurse practitioner, or physician assistant) with a specialty of primary care (defined as family practice, general practice, geriatrics, or internal medicine). 2018 starters represent 11% of all practices, 7% of applicants, and 5% of participants.

[a] 2018 starters make up approximately 5% of the participating CPC+ practices and 5% of attributed beneficiaries.

[b] As of April 1 of the first intervention year.

[c] The baseline year is 2016 for the 2017 starters and 2017 for the 2018 starters.

[d] Calculated as the percentage of beneficiaries attributed to a practice in the baseline year who were dually eligible for Medicare and Medicaid in the quarter before the start of the baseline year.

[e] The HCC score is based on beneficiaries' diagnoses in 2015 (for 2017 starters) or 2016 for (2018 starters).

[f] The lookback periods for the chronic conditions are: three years before the baseline year for Alzheimer's and related dementia; one year before the baseline year for cancer and chronic obstructive pulmonary disease; and two years before the baseline year for chronic kidney disease, congestive heart failure, and diabetes.

[g] We deflated the 2017 (baseline) mean and median per beneficiary per month expenditures for the practices in the 2018 CPC+ regions by the 0.9% Medicare inflation rate (CMS Office of the Actuary, personal communication, May 6, 2019).

[h] For the calculation of the weighted (mean/median) monthly Medicare expenditures per beneficiary, the practice-level expenditure variable (mean/median) is weighted by the number of beneficiaries attributed to the practice, so that practices with more attributed beneficiaries get a higher weight. The means and medians for all the other characteristics in the table are unweighted, meaning that each practice is treated equally, regardless of its size.

[i] This measure was calculated for beneficiaries attributed in the first quarter of the baseline year.

Supplemental materials for:

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REFERENCES

1 Anglin G, Peikes D, Harrington M, Ghosh A, Geonnotti K, O'Malley A, Dale S, Hoag S, Petersen D, Singh P, Tu H, Blue L, Orzol S, Keith R, Mutti A, Cohen G, Higgins T, Felland L, Barterian L, Peebles V, Lechner A, Morrison N, Au M, Laird J, Oh G, Machta R, Little J, Brown R (and contributing authors). Evaluation of the Comprehensive Primary Care Plus Initiative: First Annual Report, Supplemental Volume. Princeton, NJ: Mathematica; 2019.

2 Peikes D, Anglin G, O'Malley A, Peterson G, Dale S, Duda N, Brown R, Orzol S, Blue L, McCall N, Vollmer L, Ghosh A, Geonnotti K, Holt J, Finucane M, Felland L, Swankoski K, Harrington M, Fries Taylor E, Crosson J, Higgins T, Keith R, Cohen G, Tu H, Singh P, Laird J, Sullivan B, Haile G, Gellar J, Morrison N, Maurer K, Huffman T, Machta R, Kranker K, Clusen N, Carlson B. Independent Evaluation of Comprehensive Primary Care Plus (CPC+): Draft Design Report. Princeton, NJ: Mathematica Policy Research; July 2018.

3 Peikes D, Anglin G, Dale S, Fries TE, O'Malley A, Ghosh A, Swankoski K, Crosson J, Keith R, Mutti A, Hoag S, Singh P, Tu H, Grannemann T, Finucane M, Zutshi A, Vollmer L, Brown R (and contributing authors). Evaluation of the Comprehensive Primary Care Initiative: Fourth Annual Report. Princeton, NJ: Mathematica Policy Research; May 2018.

4 Centers for Medicare & Medicaid Services. CPC+ Payment Methodologies: Beneficiary Attribution, Care Management Fee, Performance-Based Incentive Payment, and Payment Under the Medicare Physician Fee Schedule for Program Year 2018. https://innovation.cms.gov/Files/x/cpcplus-methodology.pdf. Published December 1, 2017. Accessed September 25, 2019.

5 Peikes D, Anglin G, Harrington M, Ghosh A, Geonnotti K, O'Malley A, Dale S, Blue L, Orzol S, Machta R, Laird J, Singh P, Mutti A, Morrison N, Oh G, Duda N, Haile G, Kim M, Holt J, Shurrer J, Pu J, Peterson G, Vollmer L, Kranker K, Crosson J, Hoag S, Petersen D, Finucane M, Urato C, Brown R (and contributing authors). Evaluation of the Comprehensive Primary Care Plus Initiative: First Annual Report, Appendices to the Supplemental Volume. Princeton, NJ: Mathematica; 2019.